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EFFECT OF MOBILE BANKING TECHNOLOGY ON THE FINANCIAL PERFORMANCE OF DEPOSIT-TAKING MICROFINANCE INSTITUTIONS IN KENYA

Jared Mobisa Mosoti[1*], Dr. Joshua Wafula[2], & Dr. Andrew Nyang'au, PhD[3]

[1]Scholar, Department of Accounting and Finance, Kisii University
[2]Senior Lecturer, Department of Accounting and Finance, Kisii University
[3]Lecturer, Department of Accounting and Finance, Kisii University

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ABSTRACT

The Microfinance institutions in Kenya have experienced turbulent times following the collapse of many banks in the 1990s. In order to minimize their operational costs, these institutions' banks have adopted internet banking including ATMs, mobile banking, and internet banking where customers can access their accounts on their personal computers. The study's main objective was; to assess the effect of Mobile Banking Technology on the financial performance of Deposit-taking Microfinance Institutions in Kenya. The study was guided by the conventional theory of financial deepening. The study targeted all Deposit-taking microfinance institutions in Kenya that were in operation between 2016 and 2020. The target population was 387 employees, who include: management and operations, Finance and credit control, Internal and Risk, External Audit, ICT, and Litigation departments of the Twelve Microfinance Institutions that were in operation in Kenya during the period of the study 2016 and 2020. The sample size was 281. The researcher used purposive and stratified Random sampling methods whereby, in a situation where there was only one unit of observation, the entire population was involved in the study. The findings showed that the micro-finance institutions used mobile banking technology in capturing data and that this has reduced incidences of fraud in the banking sector. Further, the findings showed that mobile banking technology played a major role in the microfinance subsector and the use of cyber-crime risk identification mechanisms has reduced incidences of fraud. The study concludes that there is a positive relationship between mobile banking and the financial performance of financial institutions in Kenya. The study recommends that the management of microfinance institutions should review the mobile banking systems continuously to identify loopholes in the system that can be exploited by fraudsters.

Keywords; *Mobile banking technology, Financial performance, Microfinance institutions, and Conventional theory.*

INTRODUCTION

Mobile banking refers to the provision and availing of banking and financial services through the help of mobile telecommunication devices. Mobile banking allows transacting of financial transactions using mobile phones and other related devices, where they are able to

make transfers between bank accounts and view account balances or settle bills (Alam et al., 2018). Financial performance is a measure of a Bank's policies and operations in monetary terms. It is a general measure of a firm's overall financial health over a given period of time and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Lee et al., 2003).

Mobile banking services enabled the facilitation and movement of money from the microfinance institutions to the poor members of the society in both urban and rural centers at transaction costs that are much cheaper than those offered by commercial banks, which in the process has enabled the banks to reach the unbanked resulting in tremendous growth in the banking industry (Jenkins, 2008). The easy access and availability of the mobile phone and its convenience in size and use brought additional value and create opportunities for both mobile service providers and customers, among others. Commercial banks are now able to reach more new customers than before while at the same time providing them with banking services at their convenience anywhere in the country while existing and new customers are enjoying the increased security and affordability of the services and devices (Jenkins, 2008).

Financial institutions have been in the process of significant transformation. The force behind the transformation of these institutions is innovation in information technology. Information and communication technology is at the Centre of this global change curve of mobile and internet banking in Kenya. The rapid development of information technology has made banking tasks more efficient and cheaper. Strategic management in financial institutions demands that they should have effective systems in place to counter unpredictable events that can sustain their operations while minimizing the risks involved through technological innovations. Only financial institutions that are able to adapt to their changing environment and adopt new ideas and business methods have guaranteed Survival. Some of the forces of change that have impacted the performance of financial institutions mainly include technological advancements such as the use of mobile phones and the internet.

Mobile banking applications are continuously being developed and have now become banks" favourite channel for offering banking services. According to Laukkanen (2007), one of the main strategies for growth and a major focus for mobile network providers and the banking industry is mobile banking and the potential it offers in providing various services. For instance, mobile banking applications would enable the offering of real-time 2-way data transmission, and banking services, among other services (Daniel, 1999). Mobile banking presents an opportunity to reduce transaction costs by replacing costly labour with less expensive, automated technology and decreasing transportation costs associated with disbursing loans and collecting payments (CGAP, 2009). A recent study by the Clinton Foundation estimates that mobile money may reduce transaction costs for MFIs by up to 80%.

Statement of the Problem

Technology has greatly advanced playing a major role in improving the standards of service delivery in the financial institution sector. Roldos (2006) argued that one major aspect of growth is the financial performance of firms in the competitive environment. M-banking is one of the newest approaches to the provision of financial services through ICT, made possible by the widespread adoption of mobile phones in developing and underdeveloped countries. The rollout of mobile telephony has been rapid and has extended access well beyond already connected customers in the financial sector in Kenya.

To facilitate financial deepening, the Central Bank of Kenya in 2010, allowed regulated commercial banks to operate through third-party agents, subject to licensing of agents. In

May 2012, the Central Bank of Kenya allowed regulated deposit-taking microfinance institutions to operate not only through third-party agents, but to operate agencies. Mobile network operators and financial institutions have responded rapidly to these new powers to adopt mobile and agency banking. Between 2007 and 2012, Safaricom rolled out more than forty thousand mobile payment agents nationwide. Since 2010 a total of ten banks have connected more than ten thousand six hundred bank agents. However, of the banks, two banks Equity Bank and Kenya Commercial Bank have been particularly quick to introduce agency networks across Kenya, with thousands of agents respectively. All these models are geared towards leveraging the operating costs of commercial banks.

A recent study by the Clinton Foundation estimates that mobile money may reduce transaction costs for MFIs by up to 80%. By the end of 2010, Almost half (47.5%) of all Kenyan adults own a mobile phone (up from 26.9% in 2006), with the rate of ownership rising to 72.8% in urban areas (up from 52.3% in 2006) and 80.4% in Nairobi (up from 63% in 2006) (Kenya Financial Survey, 2009). Further, 52% received the money in 2009 compared to 16.5% in 2006.

Previous studies have revealed the potential of mobile network technologies for banking purposes (Pousttchi, 2003). Most of these studies were conducted in developed countries and thus may not reflect the impact on the success and growth of different business environments and in particular the MFIs in a developing country like Kenya. Many studies have been carried out locally on MFIs for example; Magiri (2002) investigated relationships between credit models used by MFIs in Kenya and the attainment of outreach. Ratemo (2004) carried a study on USAID strategy for the development of MFIs in Kenya and the expectations of funded institutions. Ogindo (2006) carried out a study on an assessment of the performance of MFIs in Kenya. Ala & Ngugi (2013) studied the influence of mobile banking on the growth of microfinance institutions in Kenya. However, there are few existing studies that have been done to find out the influence of using mobile banking on the financial performance of these MFIs. This study will seek to fill this gap by investigating the effect of mobile banking on financial performance in Kenya and determine whether mobile banking affects Microfinance financial performance.

Objective

To assess the effect of Mobile Banking Technology on the financial performance of Deposit-taking Microfinance Institutions in Kenya.

Hypothesis:

Ho: Mobile Banking Technology has no statistically significant effect on the financial performance of Deposit-taking Microfinance Institutions in Kenya.

Theoretical Review

Conventional Theory of Financial Deepening

The theory was proposed by Shaw (1973) and highlights the importance of credit access to the growth of SMEs. The theory is based on the view that financial deepening is a necessary pre-condition for economic growth. It rests on the premise that financial deepening enhances credit access which offers the necessary financing to firms in the economy and hence economic growth. This theory contends ta hat well-functioning financial sector promotes overall economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from traditional (non-growth) sectors to the modern growth-inducing sectors, and also promote a competent entrepreneur response in these modern sectors of the economy (Mohan, 2006).

Supporting the same view Srikanth (2013) argues that Inclusive finance, including safe savings, appropriately designed loans for poor and low-income households and for micro, small and medium-sized enterprises, and appropriate insurance and payments services can help people to enhance incomes, acquire capital, manage risk, and come out of poverty. Furthermore, access to financial services contributes to higher production and social protection, as the financial sector – through stored savings, credit, and insurance – serves as a measure of crisis mitigation postulated by the works of Mohan, (2006).

Empirical Literature

Ong'era and Omagwa (2021), carried out a study on Mobile banking and the financial performance of selected commercial banks in Kenya. The specific objectives were to find out the effect of the adoption of mobile banking on the financial performance of commercial banks in Kenya. The target population was four commercial banks and the study was conducted in 2016. The study used a descriptive research design and purposive sampling was used to select the respondents for the study. The study used both primary and secondary data. Primary data was collected using a questionnaire, while secondary data was collected from the audited financial statements over a period of 5 years (2011-2015 the data was analyzed using descriptive statistics and inferential statistics. The study findings showed that mobile banking positively influences the financial performance of commercial banks in Kenya. The study recommends that policymakers should consider working on the improvement of mobile banking and consider a switch from physical branch networks to technologically supported banking services to increase their revenue.

Harelimana (2018) carried out a study on the Impact of Mobile Banking on the Financial Performance of Unguka Microfinance bank limited in Rwanda for the year 2012 to 2016. The aim was to assess the impact of the volume of transactions and products of mobile banking services on the financial performance of microfinance institutions in Rwanda. The study used both quantitative and qualitative whereby the questionnaires and interviews were used to collect primary data. The target population was 50 employees of Unguka microfinance. Financial performance was measured using return on asset (ROA) and return on equity (ROE) The findings showed that there is a positive correlation between mobile banking and the financial performance of Unguka microfinance institution. The study recommends that the firm lowers transaction charges to increase the revenue further.

Omondi (2015) carried out a study on the effect of mobile banking on the financial performance of microfinance institutions in Kenya. The study was anchored on the conventional theory of financial deepening, endogenous growth theory, and economic theory. Determinants of financial performance were: portfolio quality (percentage of loans past 20 days) and rest are accruing: capital asset ratio used for measuring the solvency of an MFI, operational efficiency (input-output prices), and gearing ratio. The study design used was an exploratory research design. The target population was the four microfinance institutions operating in Kenya namely; Kenya Women Finance Trust, Rafiki Microfinance, Faulu Kenya and Small and Micro Enterprises Program. The study used secondary data, that was obtained from reports and various MFI publications. The findings were analysed using inferential statistics. The study findings showed that there was a significant relationship between mobile banking and the financial performance of microfinance institutions. The study recommended that policymakers and regulatory authorities should strengthen the governance and internal control structures; integrate the MFIs into the formal financial sector; policy makers consider mobile banking in their formulation of policies because of the technological developments and the expected switch from physical branch networks to technologically supported banking services.

Conceptual Framework

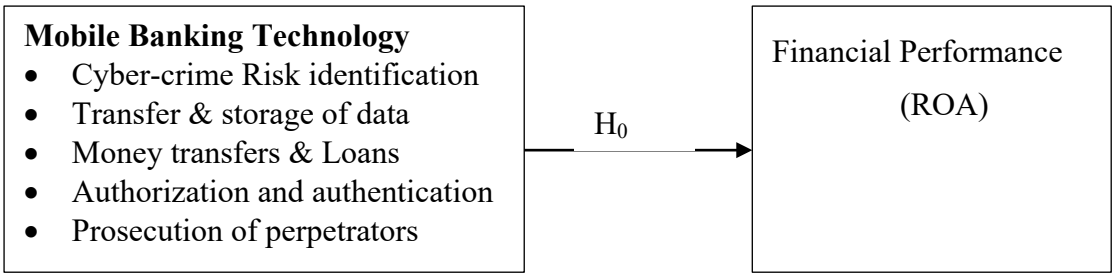

Figure 1: Conceptual Framework

Methodology

Research philosophy: This study adopts a positivism philosophy.

Research Design: Descriptive research design

The study was conducted in all Deposit-taking microfinance institutions in Kenya that were in operation between 2016 and 2020. The target population was 387 employees who include: management and operations, Finance and credit control, Internal and Risk, External Audit, ICT, and Litigation departments of the Twelve Microfinance Institutions that were in operation in Kenya during the period of the study 2016 and 2020. The sample size was 281. The researcher used purposive and stratified Random sampling methods whereby, in situations where there was only one unit of observation, the entire population was involved in the study.

This study involved the use of past financial performance of the Deposit-taking microfinance institutions thus necessitating the use of secondary data. a structured self-administered questionnaire was used for collecting primary data. The secondary data for this study was collected from the Published financial statements of all the Deposit-taking Microfinance Institutions for the period 2016- 2020.

To test the validity of the data collection instruments, the researcher sought expert opinion and carried out methodological triangulation by use of interviews and questionnaires in the data collection process. For the determination of the content validity of the instrument items, the researcher used pretesting and expert advice from forensic accountants; internal and external auditors. The study used a pilot test for external reliability.

Table 1: Reliability Test Results

Study Variables	Test Items	Alpha Coefficient
Mobile Banking Technology	14	0.714

The information gathered by use of the questionnaire was sorted, coded and input into the excel package for data cleaning before they were fed into the statistical package for social sciences (SPSS V.25) for data analysis.

Model Specification

Objective: To assess the effect of mobile banking technology on the financial performance of Deposit-taking Microfinance institutions.

$Y_i = \beta_0 + \beta_3 X_3 + \varepsilon$……..……..……..……..... (1.1)

Where Y_i = the financial performance of Deposit-taking Microfinance Institutions where i= ROA,

X_3 = mobile banking technology (MBT) is the independent variable

β_0 = Constant (the Y intercepts)

β_3, Coefficient of the regression

ε = Error Term

Table 2: Research Methodology Matrix

Objective	Hypothesis	Method of Analysis
To assess the effect of Mobile Banking Technology on the financial performance of Deposit-taking MFIs in Kenya	H03: Mobile Banking Technology has no statistically significant effect on the financial performance of Deposit-taking MFIs in Kenya	Minimums, Maximums, Mean, Standard deviation, Karl Pearson Correlation Coefficient, t-test and F test

Study Findings

Table 3: Descriptive Statistics Summary for Mobile Banking Technology

	N	Min	Max	Mean	SD	Skewness	Kurtosis
The organization uses mobile banking technology in disseminating information	204	1	5	3.672	0.970	-0.347	0.001
The use of mobile banking technology in disseminating information has reduced incidents of financial crimes in the organization	204	1	5	3.745	1.142	-1.43	1.148
The organization uses mobile banking technology in advancing loans to clients.	204	1	5	3.480	1.147	-0.605	-0.128
The use of mobile banking technology to advance loans to clients has increased incidents of financial crimes in organizations.	204	1	5	3.833	0.921	-1.532	2.366
The organization has got cyber-crime risk identification mechanisms for detecting and deterring financial crimes	204	1	5	3.652	0.973	-0.419	0.157
The Use of cyber-crime Risk identification mechanisms	204	1	5	3.833	1.018	-1.669	2.423
The organization uses mobile banking technology for transferring funds	204	1	5	3.402	1.103	-0.471	-0.127
The use of mobile banking technology to transfer funds has increased incidents of financial crimes in the	204	1	5	3.716	1.109	-1.214	0.601

organization							
The use of mobile banking technology to transfer funds has increased incidents of financial crimes in the organization	204	1	5	3.583	1.091	-0.583	-0.102
The punishing of mobile banking criminals has reduced incidents of financial crime in the organization	204	1	5	3.980	0.931	-1.811	3.661
The organization uses mobile banking technology in capturing transaction data	204	1	5	3.824	0.982	-1.626	2.499
The use of mobile banking technology in capturing data has reduced incidences of financial crimes in the organization	204	1	5	3.505	1.057	-0.392	-0.226
The organization uses mobile banking technology in storing information	204	1	5	3.382	1.079	-0.477	-0.262
The use of mobile banking technology in storing information has reduced incidents of financial crimes in the organization.	204	1	5	3.878	0.972	-1.667	2.759
Overall Score	**204**			**3.678**	**1.035**	**-1.0173**	**1.055**

Source: Field Data 2022

Mobile Banking Technology and Financial Performance

The study sought to evaluate the relationship between Mobile Banking Technology and the financial performance of Microfinance Institutions in Kenya. To achieve this objective, the following hypothesis was tested: **Ho_3**: Mobile Banking Technology has no statistically significant effect on the financial performance of Deposit-taking Microfinance Institutes in Kenya. the model was formulated as $Y_i = \beta_0 + \beta_3 X_3 + \varepsilon$Where Y_i = The financial performance (FP) of Deposit-taking Microfinance Institutions where i= ROA, X_3 = Mobile Banking Technology (MBT) the independent variable β_3, Coefficient of the regression; ε = Error Term. To achieve objective three and test the hypothesis, the researcher carried out a regression analysis of the variables whereby the R and R^2 were obtained.

Model Summary on Mobile Banking Technology on Financial Performance

The model summary below shows the values of R, R2, and the adjusted R2, as well as the standard error of the estimate, which was used to determine how well a regression model, fitted the data. the summary showed the extent of variation in the outcome variable to the predictor variables in the model. The results are shown in the table below.

Table 4: Model Summary on Mobile Banking Technology and Financial Performance

Model	R	R	Adjusted	Std. Error	Change Statistics

		Square	R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.339[a]	.115	.110	6.56402	.115	26.198	1	202	.000

a. Predictors: (Constant), Composite Effect of MBT

b. Dependent Variable: Financial Performance

Source: Field Data 2022

The results as shown in table 4 above indicated that the value for R^2 was 0.115 or 11.5%. This implied that 11.5% of the variations in financial performance as measured by Return on Assets in Kenya was by mobile banking technology while 89.5% of the variations were explained by other factors.

ANOVA on Mobile Banking Technology and Financial Performance

The Analysis of Variance (ANOVA) was used to ascertain the fitness of the model in predicting the link between the dependent and independent variable. In this case, the link between Mobile Banking Technology and financial performance. the results of the analysis for the variables were presented in table 5 below

Table 5: ANOVA on Mobile Banking Technology and Financial Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1128.791	1	1128.791	26.198	.000[b]
	Residual	8703.440	202	43.086		
	Total	9832.231	203			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Composite Effect of MBT

Source: Field Data 2022

Table 5 shows the computed F values and the p-value. The calculate value of F (1,202) = 26.198 and the p-value = 0.000). Using the p-value to check the model's fitness, showed that the model was fit to explain the relationship between the predictor variable (Mobile Banking Technology) and the dependent variable (Financial Performance) since the p-value obtained 0.000< 0.05. Further, this was confirmed by the use of the F values. The Calculated Value F (1,202), where1 was the numerator and 202 was the denominator showed that the calculated F-value was 26.198 while the critical F value at 5% of significance was 5.0239.

The results agreed with those reported by Muiruri *et al* (2015), who found a coefficient of 0.764 and a significant rate of; 0.01 and concluded that mobile banking strongly and positively influences financial performance. The results also agree with the findings of Agatha (2019) who found an F of 26.676 which was higher than the F critical and a significance of 0.000 at a 5% level of significance and concluded that mobile banking positively and significantly affected financial performance.

These results are also in agreement with the work of Mabwai (2016) who stated that as financial institutions grow in size, so are the risks of fraud, but the increase in the number of transactions will push the returns upwards and improve financial performance.

The coefficient on Mobile Banking Technology and Financial Performance

Based on the above results and discussions, the study conducted a regression coefficient to establish the mean change in financial performance for a unit variation in mobile Banking Technology among deposit-taking microfinance institutions in Kenya. The regression

coefficients were thus established to show the mean change in the dependent variable as a result of the change in the independent variable. This model facilitated the prediction of a dependent variable given an independent variable. The results are presented in table 6 below.

Table 6: Regression Coefficients on Mobile Banking Technology and Financial Performance

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-47.520	8.502		-5.589	.000
	Composite Effect of MBT	11.414	2.230	.339	5.118	.000

a. Dependent Variable: Financial Performance

Source: Field Data 2022

Table 6 above shows the coefficients, in the straight line equation that were used to predict the dependent variable given a dependent variable. The constant as shown in table 6 above was negative, meaning that the regression line started at a negative point on y-axis. This was attributed to the negative return on assets reported by most microfinance institutions in Kenya. The slope of the line is however positive meaning that, as the mobile banking technology increases, it causes an increase in the return on assets. Table 6 above shows the results for the analysis of the change in return on assets as a result of change in Mobile Banking Technology. Table 6 above shows that the constant coefficient β_0 is -47.52 while the standardized coefficient β_3 is 11.414. This showed that a unit change in Mobile Banking Technology brings about a change in the return on assets of 11.414.

To test the ***Ho₃*** hypothesis using the t-test, the calculated t-value obtained from the study was 5.118 at a 95% level of significance which was higher than the critical t-value of 1.960 for the sample size used in the study. This, therefore, led to the rejection of the null hypothesis ***Ho₃*** since the calculated t-value was 5.118>1.960.

Based on the above results the study derived the following simple linear regression equation for Mobile Banking Technology on financial performance.

$Y= -47.52+ 11.414X_3 + Ɛ$

The third objective of the study was to find out the effect of Mobile Banking Technology on financial performance. from the findings, it was established that there was a relationship between Mobile Banking Technology and the financial performance of the deposit-taking microfinance institutions in Kenya. based on the result, the null hypothesis ***HO3***: Mobile Banking Technology has no statistically significant effect on the financial performance of Deposit-taking Microfinance Institutions in Kenya, was rejected since the calculated t-value was 5.118>1.960.

The findings disagree with the findings of Memba and Wanyoro (2017), who found out that mobile banking technology has a negative effect on financial performance and pointed out that mobile banking has increased the rate of loan defaults which has negatively affected the financial performance of financial institutions. Ala & Ngugi (2013), and Omondi (2015) disagreed with the view on loan defaults and recommend that the regulatory authorities should strengthen governance and internal controls of MFIs to gain benefits from the use of mobile banking. Further, Omondi 2015 added that a switch from physical branch networks to

technologically supported banking services will improve the financial performance of microfinance institutions and other financial institutions. Ala & Ngugi proposes the development of policies and integrity measures to curb financial fraud and improve financial performance.

Summary of Findings

The objective of the study was to assess the effect of Mobile Banking Technology on the financial performance of Deposit-taking MFIs in Kenya. The findings show that organizations use mobile banking technology in capturing transaction data, which has reduced incidences of fraud in the banking sector. Further, the findings showed that mobile banking technology played a major role in the microfinance subsector and the use of cyber-crime risk identification mechanisms has reduced incidences of fraud. The findings also show that the organization uses mobile banking technology in storing information and that the use of mobile banking technology to store information has reduced incidences of financial crimes. The average mean score of mobile banking technology showed that the respondents generally accepted that mobile banking technology had an effect on financial crimes in microfinance institutions. These findings were in tandem with the hypothesis test which indicated that there is a correlation between the predictor variable (mobile banking technology) and the dependent variable (financial performance) therefore the modeled regression is a good fit for the data.

Correlation analysis disclosed that there was a positive and significant relationship between mobile banking technology and the financial performance of microfinance institutions. Regression analysis showed that mobile banking technology and the financial performance of microfinance institutions have a positive and significant relationship. These results indicate that mobile banking technology is adequate in explaining the financial performance of microfinance institutions in Kenya. The third hypothesis of the study (Ho3) that mobile banking technology has no statistically significant effect on the financial performance of Deposit-taking Microfinance Institutions in Kenya, was therefore rejected and the conclusion reached is, that there is a significant relationship between mobile banking technology and the financial performance of microfinance institutions in Kenya.

Mobile banking technology has been found to positively affect the financial performance of microfinance institutions. The findings of the study are in line with the results of Muiruri, Richu, and Karanja (2015) who studied the role of mobile banking in enhancing the financial performance of firms and found that mobile banking technology positively and significantly affected financial performance. The results also corroborate studies done by (Agatha 2019) on the effect of mobile banking technology on financial performance and found that there existed a strong positive correlation of 0.756, between mobile banking technology and financial performance. similar results were also arrived at by Ong'era and Omagwa (2021), who carried out a study on Mobile banking and the financial performance of selected commercial banks in Kenya and found that mobile banking technology, positively and significantly affects financial performance.

Conclusions

From the research findings presented above and the summary of findings, the study concludes that there is a positive relationship between mobile banking and the financial performance of financial institutions in Kenya.

Recommendation

The results also indicated that mobile banking technology positively and significantly affected the financial performance of microfinance institutions. The study recommends that

the management of microfinance institutions should review the mobile banking systems continuously to identify loopholes in the system that can be exploited by fraudsters. Further, the study recommends that the recruitment procedures incorporate the integrity aspect when recruiting staff for the IT section of the firm to minimize the chances of inadvertently admitting fraudsters into the firm's system.

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