
**MOBILE BANKING AND FINANCIAL PERFORMANCE OF MICROFINANCE
BANKS IN NAIROBI CITY COUNTY, KENYA**

Edwin Kibet Kipchoge¹, Dr. Morrison Mutuku²

¹MBA Student, Kenyatta University

²Lecturer, Department of Management science, Kenyatta University

Accepted March, 7th, 2024

Abstract

Microfinance banks play an essential role in poverty reduction and economic development as they enhance financial inclusion. To reduce the cost of service delivery and improve efficiency in service delivery, microfinance banks in Kenya have adopted mobile payments. Despite adoption of mobile banking as among microfinance institutions in Kenya, their performance has been fluctuating over the years. Therefore, this study examined influence of mobile banking on microfinance institutions' financial performance in Kenya. The study utilized an explanatory research design. The target population was 13 microfinance banks operating in Kenya and covered a period of 10 years (2012 to 2021). Since the sample size of the research was small, a census approach was employed. Secondary data on mobile banking and financial performance (ROA) was gathered from the Central Bank of Kenya and from microfinance banks' financial statements in Kenya. Secondary data was gathered using data extraction checklist. Secondary data in this study was quantitative (continuous data). Quantitative data was also edited and then coded and keyed into STATA version 14 for purposes of analysis. Panel data analysis techniques were used in data analysis. Specifically, inferential and descriptive statistics were employed in quantitative data analysis. Descriptive statistics utilized included frequency distributions, percentages, standard deviation and mean. Diagnostic tests included autocorrelation test, normality test, heteroscedasticity test, linear test, nit root test and Hausman test. Regression analysis was utilized to examine the effect of independent variable on the dependent variable. The study found that mobile banking has a positive and significant relationship on financial performance of microfinance banks in Kenya. The study recommends that microfinance banks in Kenya should consider expanding their mobile banking services to reach a broader customer base. This could involve developing user-friendly mobile apps, SMS-based services, or other mobile banking channels to make it easier for customers to access their accounts and conduct transactions.

Key Words: *Mobile Banking, Microfinance Banks, Financial Performance*

Introduction

Because of its perceived significance as a device of economic development, the belief of financial inclusion has currently taken on a wider extent of relevance. Low-income people have long been denied access to financial services by commercial banks (Okode, 2021). Low-income

workers typically make up the largest share of the population, and as a result, they own the majority of the economy's idle funds, even though each of the millions of them only have little amounts. By providing microloans to customers who cannot obtain conventional loan services, Microfinance Institutions (MFIs) fill a void in the financial services sector. However, low income earners are often considered high risk group due to their inability to pay back their loans and due to lack of collateral to secure their loans. This negatively and significantly affects financial performance of MFIs (Ngwengeh, Messomo & Mbu, 2021). The unique challenges are faced by microfinance institutions because they should attain more two bottom lines-that is giving financial services to the underprivileged and including their price.

Profitability in microfinance institutions is essential in sustaining stable micro- banking system. Low profitability undermines microfinance banks capacity to absorb shocks, which consequently affect microfinance banks creditworthiness. To improve their profitability, microfinance institutions need to reduce their cost of service delivery (Isa-Olatinwo, 2022). Increasing the number of branches and the number of staff to deliver services only increases the service delivery cost. Therefore the adoption of digital inclusion technology in terms mobile banking, can go a long way in reducing cost of service delivery. The adoption of mobile banking makes banking activities more efficient and cheaper. Mobile banking technology also reduces operating and transaction cost as most transactions have little transaction cost (Agufa, 2019).

Mobile banking entails carrying out financial transactions via a portable device, like a smartphone or Personal Digital Assistant (Hodula & Pfeifer, 2018). The emergence of mobile banking was aided by rivalry in the telecommunications sector, particularly between Safaricom and Zain (previously Airtel), which both offer Mpesa services to their consumers. For clients, these services made it easier to fund accounts and send money to other users including vendors of products as well as services, family members, and friends; this was convenient (Ozili, 2018). Mobile banking eradicates geographical limitation to clients and therefore bringing convenience. Due to the increasing competition, financial institutions have had to simplify the process of account opening, and improve efficiency in service delivery and to come up with innovative ways of doing so.

The World Bank (2020) reported that, around the world, digital financial inclusion through mobile banking enables access to cost-effective financial activities, which is necessary for economic enhancement and poverty reduction. In a study conducted in Asia, Banna and Alam (2021) observed that mobile banking services bring unified digital financial system in up-coming banks in Asia, is not just a manner of enhancing consistency, instead it makes sure there is sustainable and inclusive economic advancement that assists accomplish a stable source of income. In China, Han and Gu (2021) observed that mobile banking had significant role in encouraging enhancing of innovation and in improving the profitability of firms.

In South Africa, Machasio (2020) observed that low-income households and small organizations can benefit directly from microfinance banks using digital solutions including mobile money services, among other innovations. In Kenya, Okode (2021) indicated that the adoption of mobile financial services has significant influence on commercial banks' financial performance. However, Agufa (2019) discovered that because banking institutions use mobile banking to minimize costs of operation related with operating as well as opening branches to enhance financial performance and profitability and not to encourage financial inclusion, there is no correlation between digital finance inclusion and financial performance within the banking sector.

Statement of the Problem

Essential role is played by microfinance banks in poverty reduction and economic development as they enhance financial inclusion. However, the fast-changing competitive environment, demand for more efficient services, and competition from other financial institutions have significantly influenced performance of microfinance banks. In addition, Onchong'a (2019) acknowledged administrative costs, particularly transaction costs, as primary reason of high MFI interest rates and poor financial performance. Mobile banking presents a chance to minimize transaction costs by interchanging costly labor with cheaper service delivery channels (Agufa, 2019). In an effort to improve efficiency and reduce cost of service delivery, microfinance banks have used mobile payments. However, despite the adoption of mobile banking in Kenya, monetary performance of microfinance banks is still low.

In Kenya, microfinance banks have consistently been making losses for the last four years. For instance, in 2018, the microfinance banks made a loss in net profit after taxes of up to Ksh. 1,192 million (Central Bank of Kenya, 2021). In 2019, the net profit after taxes was Ksh. -309 million, which decreased to -2,120 million in 2020 and increased to Ksh. -734 million in 2021 (In 2018, the ROA was -1.685 percent, which increased to -0.404 percent in 2019. In the year 2020, the ROA decreased to -2.83 percent, but slightly increased to -0.99 percent in 2021 (Central Bank of Kenya, 2021). It was therefore important to determine how mobile banking affect microfinance banks' financial performance.

Various studies have been done in relation to mobile banking as well as financial institutions' financial performance in Kenya. For instance, Mugane (2020) assessed whether mobile banking services influences the performance of financial commercial banks in Kenya; Mageto, Muturi and Abuga (2017) examined how mobile banking influences commercial banks' performance in Kisii County; and Ong'era and Omagwa (2021) assessed how mobile banking influence commercial banks' financial performance in Kenya. However, Mugane (2020), Mageto, Muturi and Abuga (2017) and Ong'era and Omagwa (2021) studies were conducted among commercial banks in Kenya. The study therefore sought to examine the effect of mobile banking on the financial performance of microfinance banks in Kenya.

The study aimed to test the following null hypotheses:

H₀₁: Mobile banking has no significant effect on financial performance of Microfinance banks in Nairobi City County, Kenya

Literature Review

Theoretical Review

The study was anchored on the diffusion of innovation theory. Rogers (1995) founded the diffusion of innovation theory to describe how diffusion of innovation happens in social system. According to him there exists five phases of adoption process: knowledge, persuasion, decision, execution and confirmation. In the knowledge step, an individual gets to know about innovation and gets ideas of how it functions. In persuasion step, a person creates either unfavorable or favorable attitude toward innovation. In the decision the person gets engaged in actions that guides in making choice on whether to reject or adopt innovation (Niu, 2020). The execution involves an individual putting into use adopted innovation. The confirmation stage is the last and entails determining whether or not the decision to implement innovation was justified. Additionally, Rogers (1995) proposed three insightful ideas: diffusion and adoption of innovations may be aided by the quality of an innovation, peer-to-peer communication, and awareness of the needs of various user segments.

According to this theory, individuals will adopt a new technology if they think it would increase their utility. They must think that the technology will be useful for the purpose for which it was developed. These advantages could take the form of cost consideration and the anticipated shift in how their everyday lives operate. Additionally, they will think about how well it fits with their routines and values. According to Wang and Sun (2020), the relative advantage—degree to which technology brings advancements over presently available tools—compatibility—extent to which technology is in line with norms and social practices among its consumers—complexity—learning or ease of use—the chance to try innovation prior to committing to using it—as well as observability—the degree to which technology's outputs can be observed—are factors that affect diffusion of innovation. The factors are not collectively exclusive, making it difficult to forecast amount or rate of innovation dissemination (Cheng, 2017).

The number of innovation characteristics was increased to seven by Niu (2020). Rogers is specifically referenced in three of the seven innovation characteristics: relative advantage, compatibility, and trialability. The fourth quality, usability, is closely related to Rogers (1995) complexity. Both relative advantage and usability are subjective qualities since they might be interpreted differently based on the viewpoint of the individual. Cheng (2017) also deduced three other traits. While Kuciapski (2017) discovered that image was adoptions' independent predictor, Rogers (1995) included it as an inner component of pertinent gain. Image is the belief in oneself that including a new idea will elevate one's social status.

Diffusion of innovation theory was used to assess how mobile banking influences financial performance of Kenyan microfinance banks. The adoption and utilization of digital inclusion is characterized by relative advantage, complexity, compatibility observability and triability. Mobile banking offers numerous advantages such as convenience, accessibility, lower transaction costs, and faster processing times compared to traditional brick-and-mortar banking. Microfinance banks that adopt mobile banking can potentially attract more customers and improve their financial performance by offering these benefits. In addition, mobile banking solutions in Kenya have been designed to be user-friendly and simple to use, catering to individuals with varying levels of digital literacy. Also, microfinance banks can capitalize on this compatibility by integrating mobile banking seamlessly into their existing operations and services. The benefits of mobile banking, such as real-time transactions, balance inquiries, and bill payments, are easily observable to customers. Microfinance banks can highlight these benefits through marketing campaigns, testimonials, and demonstrations to encourage adoption among potential customers.

Empirical Review

Prior to development of mobile banking, banks slowly entered unbanked market (Ekong & Ekong, 2022). In contrast to slow rate at which traditional banking reaches market, the simplicity which various accounts of banks are usually accessible via technology of the mobile and the ease of access this has given to accounts has sped up market penetration rate. The SMS, WAP, and Java enables phones to handle additional banking functions via GPRS, including instant payment confirmation and money transfer (Adam & Alhassan, 2021). Mobile banking assists customers to get financial services including balance enquiries, payment of bills, interest rate enquiries, internet shopping, transfer of money to other accounts as well as password change.

In Nigeria, Usman (2020) studied whether mobile banking influences deposit money banks' financial performance in Maiduguri Borno State. The researcher employed survey research technique in obtaining data. The study was conducted in United Bank of Africa (Uba) PLC, Maiduguri General Branch. Fifty questionnaires were disseminated however 25 were returned.

The researcher revealed that mobile banking has no affirmative effect on deposit money banks' performance in Maiduguri. The researcher further found that if mobile increases, the rate of adoption of deposit money banks, financial performance can decrease. However, this study focused on Maiduguri Borno State in Nigeria, and therefore findings cannot be applied in Kenya because of differences in regulatory framework and the environment of the macroeconomic.

Bagudu, Shazida, and Abdul-Hakim (2017) researched on how mobile banking in Nigeria impacted commercial banks' performance. Twenty two commercial banks were chosen by employing simple random technique. Structured questionnaire was involved to assist in gathering information that was utilized for the analysis. The research discovered that mobile banking influences the commercial banks' financial performance positively. Besides being limited to Nigeria, this study deployed primary data obtained using structured questionnaires.

Harelimana (2017) investigated the nexus between mobile banking and the Unguka Microfinance Bank Ltds' financial performance in Rwanda. To gather data, qualitative and quantitative approaches, including interviews and questionnaires, were employed to address study topics. Moreover, in order to achieve its goals, the researcher focused on secondary data. Moreover, to thoroughly comprehend subject of the research, managers were also subjected to the interview. Findings showed that Unguka Bank Ltd. offers a variety of mobile banking services, including fund transfers between accounts, mobile money, bill payment, ordering checkbooks and bank statements. It was discovered that these mobile banking solutions have enhanced Unguka Ltd's revenue over the past three years. However, this study was conducted in Unguka microfinance Bank Ltd. In addition, the research utilized primary data obtained by employing questionnaires and interviews.

In Kenya, Mugane (2020) assessed whether mobile banking services influences the performance of financial commercial banks. Moreover, the research adopted descriptive design. In this research, all 40 banks for commercial operations in Kenya were the target population under investigation, with two participants from each bank giving a total of eighty respondents from all 40 Kenyan commercial banks. The best approach employed was a census inquiry method. Moreover, questionnaire was employed to obtain study's primary data. Results indicated that mobile banking services including message service, bill payments and SMS banking had significant impact on commercial banks' performance. However, Kenyan commercial banks were the focus of this research, which have a different regulatory framework from that of microfinance banks. Additionally, the study utilized descriptive research method, but this research will utilize an explanatory research design.

In Kisii, Kenya, Mageto, Muturi and Abuga (2017) examined how mobile banking influences commercial banks' performance. Moreover, the research employed 255 respondents comprising of operation managers, cashiers, clients as well as seven M-Pesa agents. The researcher discovered that, perceived, security and cost of mobile payments influences commercial banks' financial performance significantly. However, the researcher assessed commercial banks located in Kisii Town therefore, results cannot be applied to Kenyan microfinance banks operating. In addition, the researcher utilized primary data obtained using questionnaires and interviews.

In Kenya, Ong'era and Omagwa (2021) assessed how mobile banking influence commercial banks' financial performance. The researcher emphasized on few particular commercial banks—Equity Bank, KCB Bank, Co-operative Bank, and Family Bank—in July 2016. The researcher conducted this study in descriptive manner. Primary information was used in the research. A questionnaire was employed to gather primary information. In accordance to the survey, Kenya's 4 commercial banks' monetary performance is influenced by mobile banking. The survey also

revealed that mobile banking is reliable for users, helps banks reach the largest group of people of the unbanked individuals, is economical and secured, effective, and raises the volume of transactions in commercial banks. However, the researcher utilized primary data obtained using questionnaires. In addition, the researcher focused on Kenyan commercial banks, which differ from Kenyan microfinance banks.

In Kenya, Said and Kaplelach (2019) studied how mobile banking innovation influences commercial banks' financial performance. The research method utilized during the research was descriptive. 42 commercial banks comprised the target population. Utilizing structured questionnaires, data were gathered. Inferential and descriptive statistics were utilized to analyze the information gathered. Results from the regression of coefficients indicated an affirmative significant nexus between mobile banking fees, M-banking offerings, M-banking effectiveness, and also financial success of particular banks. Moreover, study demonstrated negative significant effect of mobile banking costs on financial success. However, besides being limited to Kenyan commercial banks, this research deployed descriptive research method and primary data was obtained using questionnaires. The researcher will use explanatory research design and also secondary data from microfinance banks.

Conceptual Framework

This refers to collection of wide principles and ideas generated from areas of enquiry and employed to organize subsequent presentation. Figure 1.1 presents and interprets hypothesized association between variables. The independent variable was mobile banking and the dependent variable was financial performance of microfinance banks, which was measured by employing ROA.

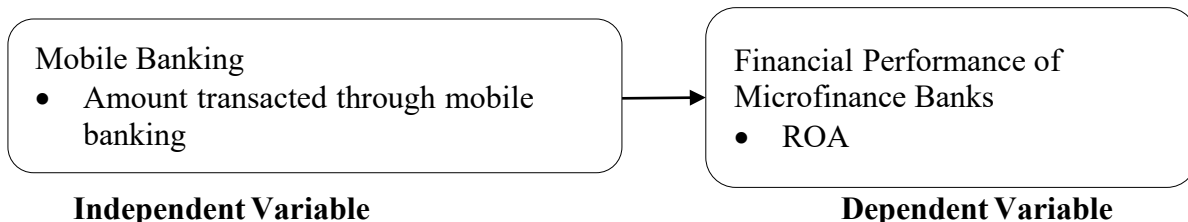


Figure 1: Conceptual Framework

Research Methodology

Explanatory research design was used to examine the influence of mobile banking on microfinance banks' financial performance in Kenya. The target population was registered microfinance banks operating in the County of Nairobi City, Kenya. A report by CBK (2021) indicates that all the 13 licensed Kenyan microfinance banks are located in Nairobi City County. The target population was therefore 13 licensed microfinance banks in the County of Nairobi City, Kenya. Since target population is small, the researcher used census method and hence entire population took part in this study. This research used secondary panel data. The data on mobile banking and financial performance (return on assets) was acquired from CBK and from the Kenyan microfinance banks' financial statements. A data extraction checklist was used in gathering the data. The study used both descriptive and inferential statistics to analyze the data with the help of STATA version 14. Descriptive statistics included mean, percentages, frequency distributions and standard deviation. In addition, inferential data analysis was done using employing regression analysis. The results were presented in tables as well as figures.

Financial performance was considered to be the dependent variable in the functional model, whereas mobile banking was treated as independent variables. The functional model was as follows:

$$FP = f(MB) \dots \dots \dots (1)$$

Regression model was;

$$FP_{it} = \beta_0 + \beta_1 MB_{1it} + \varepsilon_{it} \dots \dots \dots (2)$$

FP represents Financial performance, β_0 represents Y intercept, β_1 was coefficient of determination, MB represents Mobile Banking, ε = error term, t subscript represents time, whereas i subscript symbolizes microfinance banks.

Results and Discussions

The study used 12 Microfinance banks for a period of six years, which was between 2016 and 2021. The results encompassed descriptive analysis, diagnostic tests and panel regression analysis.

Descriptive Statistics

The standard deviation(s), minimum(s), maximum values and mean (s) of the study variables were as shown in Table 1. From the results, there were 72 observations from 12 microfinance banks in Kenya covering the period between 2016 and 2021. The average return on assets among the 12 microfinance banks for the period between 2016 and 2021 was 16.41234% and the standard deviation was 5.641851%. The minimum return on assets observed among the banks during the period was 0.6928406%. In addition, the maximum return on assets observed among the banks during the period was 26.16822%. This represents the highest performance recorded during the specified time frame.

The average amount of mobile banking transactions among the 12 microfinance banks over the specified period (2016-2021) was Ksh. 490.8275. This represents the central tendency or average amount of mobile banking transactions during that time. The standard deviation of the mobile banking transaction amounts was Ksh. 174.2557. The minimum mobile banking transaction amount observed among the banks during the period was Ksh. 159.72. The maximum mobile banking transaction amount observed among the banks during the period was Ksh. 1003.32.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	72	16.41234	5.641851	.6928406	26.16822
MB	72	490.8275	174.2557	159.72	1003.32

Diagnostic Tests

Diagnostic tests included autocorrelation test, normality test, heteroscedasticity test, linear test, nit root test and Hausman test. The Shapiro-Wilk test was used to test for normality. It is a popular method for checking whether a dataset follows a normal distribution (Kumar, 2019). The results were as shown in Table 2. The p-value for ROA is 0.127, which is greater than 0.05. Therefore, you do not have enough evidence to conclude that ROA significantly deviates from a normal distribution. In addition, the p-value for Mobile Banking is 0.193, which is also greater than 0.05. This suggests that the mobile banking variable is not significantly different from a normal distribution.

Table 2: Shapiro-Wilk Test

	Shapiro-Wilk		
	Statistic	df	Sig.
Return on Assets	.962	72	.127
Mobile Banking	.963	72	.193

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Breusch –Pagan/Cook- Weisberg test was used to test heteroscedasticity. As shown in Table 3, the p-value of 0.3426 was greater than the significance level of 0.05, which implies that there was homoscedasticity in the dataset.

Table 3: Breusch-Pagan Test for Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
 Variables: fitted values of ROA

chi2(1) = 0.90
 Prob > chi2 = 0.3426

The Breusch-Godfrey LM (Lagrange Multiplier) test was used to test for serial correlation in the data set (Williamson & Johanson, 2017). The results were as shown in Table 4. As shown in Table 4, the p-value (0.000) is less than the significance level (0.05), we can conclude that variances across entities are not zero, which means that there is significant difference across units (there is panel effect).

Table 4: Breusch-Godfrey LM test

Breusch and Pagan Lagrangian multiplier test for random effects

$$ROA[Firm, t] = Xb + u[Firm] + e[Firm, t]$$

Estimated results:

	Var	sd = sqrt(Var)
ROA	31.83048	5.641851
e	2.078971	1.441864
u	11.32846	3.365777

Test: Var(u) = 0

chibar2(01) = 45.02
 Prob > chibar2 = 0.0000

In linear regression analysis, one of the key assumptions is the assumption of linearity. This assumption states that there is a linear relationship between the independent variables and the dependent variable. A scatter plot was used to test of linearity. As illustrated in Figure 2, mobile banking has a positive linear relationship with financial performance of microfinance banks in Kenya. The results indicated that mobile banking could explain 41.4% of the financial performance of microfinance banks in Kenya. This implies that an increase in mobile banking is positively associated with financial performance of microfinance banks in Kenya. These findings agree with Usman (2020) observation that mobile banking has a positive effect on performance of deposit money banks in Nigeria. The findings are also in line with Bagudu et al. (2017) findings that mobile banking influences the commercial banks’ financial performance positively.

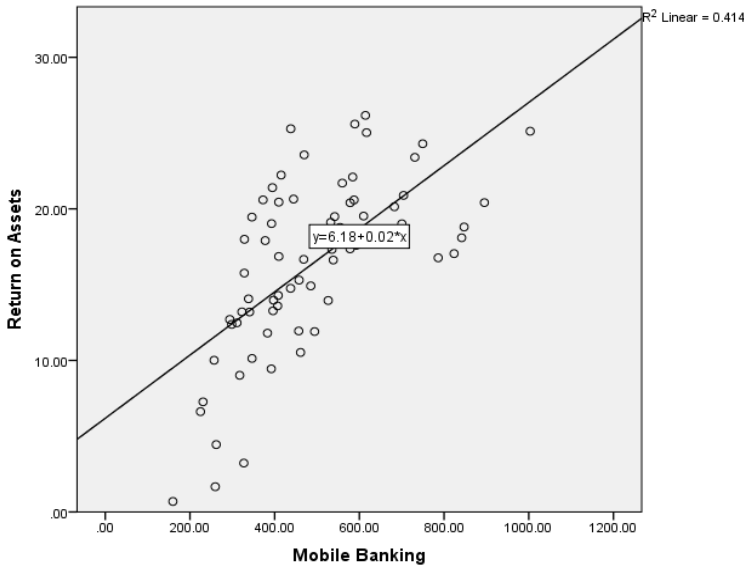


Figure 2: Mobile Banking and Return on Assets

The IPS (Im, Pesaran, and Shin) unit root test was used to examine whether a time series is stationary or non-stationary. The null hypothesis suggests that there is a stochastic trend in the data, and the series does not exhibit stationarity. With a p-value of 0.6248, which is greater than a significance level (0.05), we fail to reject the null hypothesis. This means that, based on the results there is no strong evidence to suggest that the "return on assets" variable is stationary. Instead, the test suggests that the variable may have a unit root, indicating non-stationarity. A p-value of 0.7772 in the IPS (Im, Pesaran, and Shin) unit root test for the variable "mobile banking" suggests that we do not have sufficient evidence to reject the null hypothesis.

Table 5: IPS Unit-Root Test

Variable	t-statistic	p-value	Fixed-N exact critical values		
			1%	5%	10%
ROA	-1.6916	0.6248	-2.140	-1.950	-1.850
MB	-1.5745	0.7772	-2.140	-1.950	-1.850

The purpose of the Hausman test is to assess whether the difference between the two sets of estimates (from OLS and IV) is statistically significant. If the difference is statistically significant, it suggests that at least one of the models is misspecified. The null hypothesis in this study was that random influence was the most preferable model while fixed influence model was alternative hypothesis. As illustrated in Table 6, Hausman specification test p value (0.4282) was less than the alpha value of 0.05 (at 95% confidence interval). This implied that the null hypothesis failed to be rejected implying that the study needs to use random effects model.

Table 6: Hausman Test

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	$\sqrt{\text{diag}(V_b - V_B)}$ S.E.
MB	8.021212	7.907393	.1138189	.1436607

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(1) &= (b-B)' [(V_b - V_B)^{-1}] (b-B) \\ &= 0.63 \\ \text{Prob} > \text{chi2} &= 0.4282 \end{aligned}$$

Panel Regression Analysis

Panel Regression is a combination of cross section data and time series, where the same unit cross section is measured at different times. In the results, the R-squared shows the variation in the dependent variable that can be explained by the independent variables. From the findings the overall r-squared for the⁰relationship between mobile banking and financial performance (return on assets) of microfinance banks was 0.4142. This implies that the independent variables (mobile banking, agency banking and internet banking) explain 41.42% of the dependent variable (financial performance). In this study, the p-value for the F-test was 0.000, which is less than the significance level (0.05). This means that the model is a good fit for the data. In this study, the p-value for the F-test was 0.000, which is less than the significance level (0.05). This means that the model is a good fit for the data.

From the findings, mobile banking has a positive and significant relationship on financial performance (return on assets) of microfinance banks in Kenya as shown by a beta coefficient of 0.0438639. This means that a unit increase in mobile banking across time and microfinance banks would lead to a 0.0438639 increase in financial performance (return on assets) of microfinance banks. The association was significant as the p-value (0.000) was less than the significance level (0.05). These findings agree with Mugane (2020) findings that mobile banking services positively influence the performance of financial commercial banks. The findings are also in agreement with Mageto et al. (2017) that mobile banking influences commercial banks' performance positively.

Table 7: Regression Results

```

Random-effects GLS regression              Number of obs   =           72
Group variable: Firm                      Number of groups =           12

R-sq:  within = 0.8761                    Obs per group: min =           6
        between = 0.2993                    avg =           6.0
        overall = 0.4142                    max =           6

corr(u_i, X) = 0 (assumed)                Wald chi2(1)    =          310.88
                                                Prob > chi2     =           0.0000

```

ROA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
MB	.0438639	.0024878	17.63	0.000	.0389879	.0487398
_cons	-5.117262	1.710789	-2.99	0.003	-8.470347	-1.764177
sigma_u	3.6048129					
sigma_e	1.52971					
rho	.84740397	(fraction of variance due to u_i)				

Conclusion and Recommendations

The study concludes that mobile banking has a positive and significant relationship on financial performance (return on assets) of microfinance banks in Kenya. The findings imply that an increase in agency banking would lead to an improvement in the financial performance of microfinance banks. This suggests that microfinance banks in Kenya can potentially improve their financial performance by embracing and expanding mobile banking services.

The study found that mobile banking has a positive and significant relationship on financial performance of microfinance banks in Kenya. The study recommends that microfinance banks in Kenya should consider expanding their mobile banking services to reach a broader customer base. This could involve developing user-friendly mobile apps, SMS-based services, or other mobile banking channels to make it easier for customers to access their accounts and conduct transactions. Also, the study recommends that microfinance banks should establish responsive customer support channels for mobile banking users. This can include dedicated hotlines, chat support, or in-person assistance at bank branches to address any issues or queries related to mobile banking.

Areas for Further Research

This study was limited to microfinance banks in Kenya and hence its findings cannot be generalized to other financial institutions in Kenya including microfinance institutions and Savings and credit cooperative societies. The study suggests further studies on mobile banking and the financial performance of microfinance institutions and Savings and credit cooperative societies. This study found that mobile banking explains 41.42% of the financial performance of microfinance banks in Kenya. The study hence proposes studies on other factors that influence financial performance of microfinance banks in Kenya. Further, financial performance measured using return on assets. The study therefore suggests further studies to look at other measures of financial performance such as return on equity and return on investment.

REFERENCES

Adam, I.O. & Alhassan, M. (2021). Bridging the global digital divide through digital inclusion: the role of ICT access and ICT use. *Transforming Government: People, Process and Policy*, 15(4), 580-596.

- Agufa, M. M. (2019). *The Effect of Digital Finance on Financial Inclusion in the Banking Industry in Kenya*. Retrieved from <http://erepository.uonbi.ac.ke>
- Bagudu, H., Shazida, J. & Abdul-Hakim, S. (2017). The Effect of Mobile Banking on the Performance of Commercial Banks in Nigeria. *International Research Journal of Management, IT & Social Sciences (IRJMIS)*, 12, 90-122.
- Banna, H. & Alam, R. (2021). Is Digital Financial Inclusion Good For Bank Stability And Sustainable Economic Development? Evidence from Emerging Asia. *Review of Behavioral Finance*, 21, 101-129.
- Central Bank of Kenya (2021). *Supervision Report of Banks*. Retrieved from <https://www.centralbank.go.ke>
- Cheng, H. H. (2017). The antecedents of creative article diffusion on blogs: Integrating innovation diffusion theory and social network theory. *Online Information Review*, 41(1), 70-84
- Ekong, U.M. & Ekong, C.N. (2022). Digital currency and financial inclusion in Nigeria: lessons for development. *Journal of Internet and Digital Economics*, 2(1), 46-67.
- Han, H. Y. & Gu, X. M. (2021). Linkage between Inclusive Digital Finance and High-Tech Enterprise Innovation Performance: Role of Debt and Equity Financing. *Frontiers Psychology*, 12, 814408.
- Harelimana, J.B. (2017). Impact of Mobile Banking on Financial Performance of Unguka Microfinance Bank Ltd, Rwanda. *Global Journal of Management and Business Research*, 17(4), 1-18.
- Hodula, M., & Pfeifer, L. (2018). Fiscal-monetary-financial stability interactions in a data-rich environment. *Review of Economic Perspectives*, 18(3), 195–224.
- Isa-Olatinwo, A. (2022). Impact of Digital Financial Services on Financial Performance of Commercial Banks in Nigeria. *International Journal of Economics and Management Systems*, 13(7), 300-322.
- Kuciapski, M. (2017). A model of mobile technologies acceptance for knowledge transfer by employees. *Journal of Knowledge Management*, 21(5), 1053-1076.
- Machasio, I. N. (2020). *COVID-19 and Digital Financial Inclusion in Africa: How to Leverage Digital Technologies during the Pandemic*. Washington DC: World Bank.
- Madugba, J., Egbide, B. & Onwubiko, O. C. (2021). Effect of electronic banking on financial performance of deposit money banks in Nigeria. *Banks and Bank Systems*, 16(3), 71-83.
- Mageto, I., Muturi, W.M. & Abuga, V.M. (2017). Effect of Mobile Banking on Financial Performance of Commercial Banks in Kisii Town, Kenya. *International Journal of Recent Research in Commerce Economics and Management*, 4(1), 116-125.
- Mugane, M. (2020). Mobile Banking Services Effect on Financial Performance on Commercial Banks in Kenya. *International Journal of Sociotechnology and Knowledge Development*, 12, 79-98.
- Ngwengeh, B.B., Messomo, E.S. & Mbu, S.A. (2021). The Influence of Digital Financial Services on the Financial Performance of Commercial Banks in Cameroon. *European Scientific Journal*, 17(15), 448.
- Niu, J. (2020). Diffusion and adoption of research data management services. *Global Knowledge, Memory and Communication*, 69(3), 117-133.
- Okode, M. O. (2021). Digital Financial Services and Financial Performance of Commercial Banks in Kenya: A Descriptive & Correlational Approach. *International Journal of Economics, Commerce and Management*, 10(2), 427-438.

- Onchong'a, V. K. (2019). *The Effects of Financial Innovations on the Performance of Microfinance Institutions in Kenya for the Period 2011-2016*. Retrieved from <https://erepo.usiu.ac.ke>
- Ong'era, S. B. & Omagwa, J. (2021). Mobile Banking and Financial Performance of Selected Commercial Banks in Kenya. *International Research Journal of Business and Strategic Management*, 2(1), 79-94.
- Ozili, P.K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329-340.
- Rogers, E (1995). *Diffusion of Innovations*. New York: Free Press
- Said, F., M. & Kaplelach, S. (2019). Mobile Banking Innovation and Financial Performance of Selected Commercial Banks in Kenya. *Journal of Finance and Accounting*, 3(3), 228-254.
- The World Bank (2020). *Digital Financial Services*. Retrieved from <https://pubdocs.worldbank.org>
- Usman, M. (2020). Effect of Mobile Banking on Financial Performance of Deposit Money Banks in Maiduguri Borno State: A Case of United Bank of Africa (Uba) PLC, Maiduguri Main Branch. *MIS Quarterly*. 27(3), 425–478.
- Wang, H. & Sun, B. (2020). Firm heterogeneity and innovation diffusion performance: absorptive capacities. *Management Decision*, 58(4), 725-742.