A Study of the Effects of Mobile Banking Services on the Financial Performance of Zambian Commercial Banks - A Case Study of Atlas Mara

Misozi Siasulingana[1] and Dr. Lubinda Haabazoka[2]
[1]Graduate School of Business, University of Zambia, Lusaka, Zambia
[2]Graduate School of Business, University of Zambia, Lusaka, Zambia

[1]Corresponding Author: smisozidc@rocketmail.com

ABSTRACT

This paper sought to determine the effects of Mobile Banking Services on the Financial Performance of Zambian Commercial Banks focusing on Atlas Mara as a case study. The study endeavoured to determine the impact of mobile banking access, mobile banking loans and mobile banking risks on commercial banks' financial performance. The study made use of descriptive research design. Atlas Mara Zambia's senior and middle management staff as well as supervisors made up the study's target population. A total of 287 bank employees were chosen as a sample using purposive and stratified random sampling. The Bank of Zambia, the Zambia Communications Authority, and the Atlas Mara Annual Reports provided secondary data, while structured questionnaires completed through Google online forms were used to collect primary data. Data analysis was carried out using descriptive and inferential statistics. Regression analysis and Pearson Correlations were used to analyse quantitative data. The study results show that, despite the fact that mobile banking accessibility and mobile banking loans have improved the financial performance of commercial banks, their success is still threatened by mobile banking risks related with the Internet and technological innovation. The study suggests that in order to improve the strength of the Internet and network coverage across the entire country, the banking industry should engage with telecommunication service providers. Commercial banks should look beyond improved accessibility and start assessing how well mobile banking's customer service functions. Commercial banks should spend money raising consumer awareness of new goods and services designed specifically for mobile banking. Commercial banks should allocate enough funds to research that could support the development of new products for use with current mobile banking platforms.

Keywords: financial performance, mobile banking access, mobile banking loans, mobile banking risks

I.   INTRODUCTION

Mobile banking was initially introduced in Zambia by the Zambia National Commercial Bank (ZANACO), a joint venture between the Zambian government and the Rabobank Group of the Netherlands. Rabobank had $650 billion in assets and $34 billion in equity, making it one of the world's largest banks (Kawimbe et al., 2022). For ZANACO's *Xapit* mobile banking service, affordability is a big selling element. Two more mobile banking services are available in the country. Zambia's second-largest mobile phone service provider MTN Zambia was the first to team up with the bank to provide mobile banking services for its users (Mwamba, 2019).

The major objective of Zambia's mobile banking framework is to enable the millions of citizens who are no longer able to access conventional financial services to do so themselves (Bagudu, Mohd-Khan & Roslan, 2017). The focus is on financial inclusion in mobile banking and with low-cost phones for as low as ZMW100 and small dollar top ups starting at ZMW1, it has become more widely available. Mobile banking plays an important part in the expansion of the country's financial industry. In the United States, where there are more than five million active mobile phone users as such, mobile banking has a huge potential for growth. How well a corporation uses its primary mode of operation and generates revenues determines its financial performance (Larina, Postnikova, Ageeva & Haabazoka, 2021). Companies in the same industry or across sectors can be compared to see how well they've fared financially in the past few years.

Numerous methods exist for determining the overall financial health of an organization; all must be taken into consideration. In addition to total unit sales, revenue, operating income, and cash flow from operations can also be utilised as line items (Morgun, Ibraimova, Haabazoka, & Makhmudov, 2021). Ultimately, the company's goal is to produce money for its shareholders. Profitability is measured using a variety of metrics, including Return on Assets (ROA), Return on Equity (ROE),

and Net Interest Margin (NIM) (Yankovskaya, Osavelyuk, Inozemtsev & Haabazoka, 2021). The ROA ratio, which measures a bank's earnings against its total assets, can be used to determine its profitability (Khrawish & Al-Sa'di, 2011). An evaluation of the ability of a company management to profit from its resources is the focus of this assessment. According to NIM, the difference between banks' interest revenues and their interest payments is calculated by taking the percentage of total assets held by the banks into account. As Phiri (2020) points out, technological advancements have had a tremendous impact on the banking industry's service delivery standards. According to this report, mobile banking has a significant impact on bank performance in Zambia.

Statement of the Problem

Mobile banking is expected to increase the profitability of commercial banks, as mobile banking services are geared towards increasing the velocity and circulation of money in the economy. Currently, apart from personnel costs, mobile technology is usually the biggest item in the budget of commercial banks, and the fastest growing one. The increase in operating costs for most banks is attributed to the increase in operating costs mainly investment in ICT and network infrastructure notably for Atlas Mara Zambia which introduced a mobile platform called *Tenga* (Phiri, 2020). Zulu (2022) asserts that Standard Chartered Bank Zambia had made large investments in ICT in order to enhance their mobile banking services solutions. It is, therefore, important that mobile banking innovations are made by sound analysis of risks and costs associated so as to avoid harm on the bank performance. Fast advances in the wireless technology and the intensive penetration of cell phones have motivated banks to spend large budgets on building mobile banking systems hence driving up the functional costs of many commercial banks in Zambia which is an operational problem. For sustainable intermediation function, banks need to be profitable. The question arises as to whether investment in mobile banking technology increases or reduces financial performance of commercial banks. Despite the above, very few commercial banks have taken the use of mobile banking seriously as most of them are still performing poorly going by the ROA for third quarter 2022 (Standard Chartered Bank Zambia, 2022), while adoption of mobile banking by banks remains low although most of the clients no longer want to go to the banks in person. This study, therefore, sought to determine the effect of mobile banking on the performance of commercial banks using a case study of Atlas Mara Zambia.

Main Hypothesis

H_{01}: Mobile banking access has no effect on the financial performance of commercial banks
H_1: Mobile banking access has an effect on the financial performance of commercial banks
H_{02}: Mobile banking loans have no effect on the financial performance of commercial banks
H_2: Mobile banking loans have an effect on the financial performance of commercial banks
H_{03}: Mobile banking risks have no effect on the financial performance of commercial banks
H_3: Mobile banking risks have an effect on the financial performance of commercial banks

The management of Atlas Mara Zambia and the entire banking industry as a whole will be able to strategise on how to realize maximum benefits from mobile banking through the findings of this study. The research findings may add dimensions that may help improve policy direction with regard to regulation of mobile banking as well as factors that spur economic growth.

II.   EMPIRICAL LITERATURE REVIEW

Mobile banking is defined as "a form of banking transaction carried out via a mobile phone" (Migdadi, 2012). Moreover, it is defined as a "type of execution of financial services in the course of which - within an electronic procedure- the customer uses mobile communication techniques in conjunction with mobile devices". Mobile banking is classified into three types – App-based banking, SMS banking, and USSD Banking. Mobile banking applications encompass the broadest range of banking services. The technologies generally used for mobile banking are Interactive Voice Response (IVR), Standalone mobile application clients, SMS and WAP. The delivery of a mobile banking service to a consumer involves the participation of four primary players; a bank, mobile network operator (MNO), a mobile banking technology vendor, and the consumer (Popkova & Haabazoka, 2019).

The ability of commercial banks to generate sustained profits is determined by their financial performance (Handema & Haabazoka, 2020). Bank managers place a high value on the identification and efficient management of the variables that affect financial performance levels. In the competitive operating business environment of financial institutions, managers must recognise and implement best practices to achieve outstanding performance, including leveraging innovation like mobile banking.

Heinle and Verrecchia (2016) carried out an on-line survey in Ireland and collected their data using the snowball sampling technique. According to research, consumers' behavioural intention to use mobile banking in Ireland was

significantly influenced by compatibility, perceived utility, and trust. Ireland's consumers do not shun mobile banking because of inconvenience, security, or perceived risk issues.

Aziz, Badrawy and Hussein (2014) put forth a paradigm with the goal of examining and contrasting the factors and difficulties that affect Egyptian consumers' intentions to use or adopt alternative self-service banking technologies. The data was analysed using cross tabulations, frequencies, and chi square tests. The three groups diverge greatly in terms of usage, value, risk, tradition, and image barriers. Significant correlations between adoption choices and knowledge of Internet banking, level of education, and type of mobile device ownership were also discovered.

Al-Jabri and Sohail (2012) used the dispersion of innovation hypothesis to examine Saudi Arabia's choice in mobile banking. The study evaluated a variety of specialised characteristics and their effect on how flexible banking is received in third-world countries like Saudi Arabia. To evaluate the hypotheses and investigate factors that might affect mobile banking usage and reception, dispersion of progress was used. The report recommended that Saudi Arabian financial institutions offer mobile good banking services that take into account a variety of customers' requirements, convictions, prior experiences, and habits while also satisfying customers' needs. The study recognised and distinguished the impact of varied trade volumes on the financial planning of commercial banks.

Muisyo, Alala and Musiega (2014) evaluated the effect of mobile money services on banking institutions in Kenya. The study focused on commercial banks operating in Kakamega County. The study reveals that the introduction of a myriad of mobile money services (MMS) by various mobile money service providers to customers has become common in the recent years as a way of gaining competitive advantage through diversification, maintaining customer loyalty and increasing market share in order to grow their profitability and improve their financial position. The roll out of these services in developing countries has generated a lot of interest among various players in the financial sector of the economy. Such services include person to person (P2P) mobile money transfer (MMT), pay bill services, loan to customers and access to a wide range of banking services e.g. a/c balances, mini statements, transfer of money from one`s mobile line a/c to one`s own bank account.

Mutua (2013) examined how flexible savings affected the financial health of commercial banks in Kenya. The research outline was either descriptive or illustrative. The sample size included mobile utility administrators and 43 business banks operating in Kenya as of December 2012. The total amount of money transferred over mobile devices for the previous five years was gathered, and the number of customers was compared to the profitability of the bank as determined by investment returns. According to the study, there is only a weakly favourable association between mobile savings and Kenya's business banks' financial performance.

Kithaka (2014) studied how Kenyan business banks' budgetary performance was impacted by their versatility. For this case, a cross-sectional survey research plan was used. This provided who, how, and what information about Kenya's commercial banks' use of mobile banking. All of the commercial banks in Kenya that offer mobile banking were examined as part of the study, which included a census survey. Secondary data were utilised in the study. The study concluded that mobile banking had a good and significant impact on Kenyan business banks' financial performance.

Kathuo, Rotich and Anyango (2015) conducted a study on how mobile banking has affected Kenyan business banks' financial success. In the study, a descriptive research plan was used. A total of 42 active Kenyan business banks were included in the sample as of December 2014. Primary data were gathered through questionnaires. Clear measurements were used for the analysis of measurable data, while descriptions were used to display subjective data. According to the survey, the number of mobile exchanges has dramatically increased in the most recent five years since the introduction of mmobile banking. They concluded that banks that embraced mmobile money services had an unfathomably wide customer base and, as a result, had significantly improved their financial performance.

Katema and Lungu (2019) looked into the variables affecting Kitwe commercial banks' adoption of mobile banking in Zambia. The study used simple random sampling to get a sample size of 60 while using purposive sampling to choose the commercial banks. The researchers employed descriptive statistics (measures of central tendency). According to the study findings, the majority of account holders are knowledgeable about using electronic banking services and are eager to adopt them for their banking requirements. According to the study findings, clients may now access their money whenever they want and believe that mobile banking is a cost-effective solution to reach the un-banked.

Mwiya et al. (2017) conducted an empirical study examining factors influencing e-banking adoption in Zambia. The study examined the influence of e-banking technology's PU, PEU and trust (safety and credibility) on e-banking adoption. The findings indicated that modified TAM was applicable to the Zambian scenario for assessing, monitoring and increasing the adoption of e-banking services and that that PU, PEU and trust significantly and positively influences attitude to e-banking. In turn attitudes to e-banking influence intention and the actual adoption of e-banking services.

Lusaya and Kalumba (2018) conducted a research in Zambia, which was aimed at investigating the challenges of adopting the use of e-banking by customers. The results of the study found that e-banking usage dependent on the availability of e-banking information. This means that there is increased publicity on e-banking, it is expected that if many customers would use the service. The results also showed that education levels also have a statistically significant influence on e-banking usage. This means that the higher the level of education, the more the usage of e-banking services. This is in line with the

technological acceptance model. The study found that at 5% level of significant, concern for personal security was not related to usage of e-banking services.

III.   THEORETICAL LITERATURE REVIEW

3.1 Market Power Theory
In his seminal analysis in 1934, Lerner explains that a firm with market power would price above marginal cost and receive economic rents to the harm of consumers in the form of what economists call dead weight loss. Increased market forces increase market power. Market power is the ability of firms increasing prices without losing all its customers. This theory can take two forms in the banking sector which includes differentiations of products and service. Banks with a large market share and diversified product and services are most likely to exert their market power to determine prices for their products and services which in turn results into profits (Mensi, 2010). Market power theory consist of two hypotheses namely the traditional structure conduct hypothesis and relative market theory. Traditional structure conduct hypothesis argues that the more concentrated markets are, the lesser the competition due to high interest rates and lower deposits. Relative market hypothesis argues that only banks with big brands can influence pricing and rise profits. In market power hypothesis, banks with market power are less concerned with efficiency because of the exploitation through market power when determining prices for their goods and services which in turn allows them to automatically make profits. The benefits from Market power has been the most reason why there is a concentration of mergers and acquisitions in the banking sector as it increases the market share or merging firms.

3.2 Efficiency Structure Theory
The X-efficiency theory was developed by Leibenstein (1994). According to the efficiency structure theory, increased management scale efficiency leads to higher concentration, which results in higher profitability. The commercial banks want to attain their predetermined financial performance through this efficiency. According to Nzongang and Atemnkeng (2006), the balanced portfolio theory has added a new dimension to the study of bank performance. This theory contends that the entire bank's policy choices and the leadership's choices determine the bank's earnings, return to shareholders, and portfolio composition. Therefore, it can be concluded from these theories that both internal and external factors have an impact on the financial success of banks. The study also confirmed that the internal elements that affect a bank's performance include factors peculiar to that institution. The efficient structure theory includes two hypotheses, X efficiency and scale efficiency hypotheses.

3.3 Innovation Diffusion Theory
Innovation is any idea that is perceived to be new by individuals. Diffusion is the process by which innovation is communicated through various channel over a certain period of time to various members of the social system (Rodgers, 2003). Innovation diffusion theory is a theory which explains the intentions of individuals to use technology as an alternative to the traditional way of doing things. It illustrates how new innovations gain momentum through social systems. This can be related to the banking environment where individuals are able to perform banking transaction using their phones wherever they are unlike the tradition way of going to banks to even perform transactions like balance inquiry. Innovation diffusion theory follows a five step process which includes; knowledge, persuasion, decision, implementation and confirmation steps. Knowledge is where individuals get to know about the innovation and how it functions. Persuasion is a step where an individual makes either a favourable or unfavourable altitude towards the innovation. Decision step is where an individual chooses whether to adopt or reject the innovation and the implementation stage is where innovation is put into use and finally the results are evaluated in the confirmation stage (Orr, 2003).

3.4 Financial Intermediaries' Theory
The theory regarding financial intermediation was developed starting with the 1960's in the 20th century, the starting point being the work of Gurley and Shaw (1960). The financial intermediation theory is based on the theory of informational asymmetry and the agency theory. Financial intermediary theory explains the role of mobile banking in the financial intermediary process by ensuring access to banking services using the mobile phone. This technology is important as it correlates with the changes in the current economic environment in which potential lenders and borrowers are brought together by a third party. Lenders have access to a variety of individuals and businesses whom they can lend money to and reduce their lending risk due to exposure to a variety of customers on the market. Borrower's needs are satisfied too due to the variety of securities which are traded on the market from which they could choose. Financial intermediaries provide a floating pool of funds to both lenders and borrowers. The theory emphasizes on the need for financial intermediaries to expand their services in developing countries where problems of information asymmetry is so much pronounced and therefore, contribute to their GDP (Mungai, 2019).

From the review of theoretical literature, it can be inferred that mobile banking can significantly and insignificantly affect commercial bank financial performance. The reviewed theories provided varying explanations on the effect that mobile banking platforms could have on the financial performance of commercial bank.

IV.   RESEARCH METHODOLOGY

Research Design

The study adopted a descriptive research design with a quantitative approach. In the descriptive design, the researcher does not manipulate the variables but rather describes the sample or the variables (Siedlecki, 2020). The design focused on the population or its subset to collect data that assisted to answer all the research questions. Primary data were collected using a questionnaire which was administered to the sample and secondary data were collected from published financial statements of Atlas Mara Zambia and Bank of Zambia for the years 2018-2022 and will focus on before and post mobile banking performance of the bank and the effects on its financial performance.

Population of the Study

The target population of this study comprised of all the 1020 Atlas Mara Zambia employees as at 31st December 2021.The period of analysis was chosen based on data availability and its sufficiency to provide reliable results based on quantitative and statistical analysis.

Sample and Sampling Procedure

The study adopted a stratified random sampling method to choose a fully representative sample from all hierarchies and departments of the Bank. The main goal of such a sampling method is to focus on characteristics of a population that are of interest, which then guide the researcher to answer the study's research objectives. The sample of the study was 287 respondents established using De Vaus' (2016) formula for known populations.

Data Collection

Both primary and secondary data were used in this research. Thus, primary data were collected through the use of structured questionnaires administered to participants. The primary data collected for this study were taken from Atlas Mara Zambia employees. Secondary data for this study were obtained from the bank's financial statements before and after the introduction of mobile banking focusing for the period 2015 to 2022.

Data Analysis

Data analysis is typically used to describe an approach for extracting meaning from obtained data by methodically and objectively identifying key characteristics (Bryman & Bell, 2015). Statistical Package for Social Sciences (SPSS) was used for data analysis. Data analysis was done before editing. The study used both construct and content validity, as advised by Polit and Hungler (2006), and separated the questionnaires into different sections to make sure each component closely matched the conceptual framework and assessed information for each objective. To give the data in this study context, descriptive statistics like means, percentages, and frequencies were applied. Tables and figures were used to present the data. The strength and connection between the independent factors and financial performance were evaluated using Pearson's correlation method. ANOVA (Analysis of Variance) and regression of coefficients were used in the analysis, and regression analysis was also used to evaluate the model's fitness (R-square). Tables and figures were used to present the data.

Model Specification

The degree to which all of the independent variables together predict financial performance was explained by the model's fitness. Using the standard threshold of significance of 0.05, ANOVA statistics explained the model's overall significance. Specifically, the regression model listed below was used:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu$$

Where;
Y= Financial Performance (ROA, ROE and NIM)
X_1 = Mobile Banking Access
X_2 = Mobile Banking Loans
X_3 = Mobile Banking Risks
α = constant
μ= error term
$\beta1, \beta2, \beta3$ = beta coefficients

V.   RESEARCH RESULTS AND ANALYSIS

Effect of Mobile Banking Access on Financial Performance of Atlas Mara

Table 1 shows that a total of 45% of respondents agreed that mobile banking enabled 24/7 access to financial services. There were 52% of respondents who claimed they used mobile banking less frequently than traditional banking. In addition, 53% of respondents believed that users would find it easy to use mobile banking for transactions, bill payments, and account access. Customers can access their bank statements, check their balances, and bank anywhere, according to 44% of respondents. Additionally, 51% of respondents said that mobile banking could be accessed virtually. In addition to the ease of banking, 53% of respondents said that customers can communicate their grievances and problems. 42% of respondents claimed that mobile banking had made it possible for residents of rural areas to access financial services. The respondents' 54% level of agreement offered more proof that mobile banking had increased profitability. More than 50% of those surveyed concurred that mobile banking improved service delivery by boosting effectiveness and efficiency.

Table 1: Descriptive statistics of mobile banking access vs financial performance of bank

Mobile banking access variables	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	Std Dev.
Mobile banking has enabled 24/7 accessibility to financial services	2	2	15	36	45	4.2	0.9
Time spent in mobile banking is low compared to the traditional banking	2	7	24	52	15	3.7	0.9
Our clients can easily transact, pay bills and access their accounts through mobile banking	0	1	13	53	32	4.2	0.7
Our clients can bank anytime anywhere, check their balance and access bank statements.	0	3	18	44	34	4.0	0.8
Mobile banking is accessible, in terms of virtual locations and general national footprint.	1	3	20	51	25	4.1	0.8
Clients can easily interact with bank; express themselves without visiting their branches	0	2	5	40	53	4.4	0.7
There is great potential of using this for tapping into the unbanked community	3	3	19	32	43	4.1	1.0
Mobile banking has led to accessibility of financial service to customers in remote areas	1	6	23	42	28	4.2	3.6
Mobile banking has led to profitability of commercial banks.	0	1	16	54	28	4.1	0.7
Mobile banking increases effectiveness and efficiency of service delivery.	0	2	19	50	29	4.5	0.9
Overall Mean						**4.1**	**1.1**

Key: SD- Strongly Disagree, D- Disagree, N- Neutral, A- Agree, SA-Strongly Agree, Std Dev-Standard Deviation

The study discovered a strong positive link between mobile banking access and the financial performance of commercial banks ($r = 0.677^{**}$, p=0.000) with a significance level of 0.5% as shown in Table 2. The results are in line with those by Kathuo, Rotich and Anyango (2015), who found that, banks which have embraced M-banking services have significantly expanded their client base and consequently enhanced their financial performance.

Table 2: Correlation between mobile banking access and bank performance

Correlations		ROA	Mobile Banking Access
	Pearson Correlation	1	0.677^{**}
ROA	Sig. (2-tailed)		0.000
	N	256	256
	Pearson Correlation	0.677^{**} 1	Pearson Correlation
Mobile banking access	Sig. (2-tailed)	0.000	Mobile banking access
	N	**256**	**256**

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

Table 3's R squared value of 0.458 indicates that access to mobile banking may be responsible for a variation of 45.8% in the financial performance of commercial banks.

Table 3: Model summary for mobile banking access

Model	R	R Square	Adjusted Square	R Std.	Error of the Durbin-Watson Estimate
1	0.677[a]	0.458	0.456	0.71943	1.311

a. Predictors: (Constant), Mobile Banking Access
b. Dependent Variable: ROA
Table 3 presents the ANOVA of the study.

Table 3: ANOVA[a] for mobile banking access

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	111.032	1	111.032	214.524	0.000[b]
1	Residual	131.464	254	0.518		
	Total	242.496	255			

a. Dependent Variable: ROA
b. Predictors: (Constant), Mobile banking access

　　　　The regression equation below based on Table 4 implies that constant performance of Atlas Mara Zambia is at 1.935 units before the influence of factors associated with mobile banking access. But a unit increase in financial accessibility leads to 0.629 unit increase in the financial performance of the banking sector. Based on the findings of the correlation coefficients, the following regression model was developed:
$Y = 1.935 + 0.629X_1$…………………....Equation I

Table 4: Regression coefficients for mobile banking access and bank performance

Model		Un-standardised Coefficients		Standardised Coefficients			95.0% Interval for Lower Bound	Confidence B Upper Bound
		B	Std. Error	Beta	t	Sig.		
1	(Constant)	1.935	0.170		11.398	.000	1.601	2.270
	Mobile banking access	0.629	0.043	0.677	14.647	.000	0.545	0.714

a. Dependent variable: ROA

Effect of Mobile Loans on the Financial Performance of Atlas Mara
　　　　Table 5 results suggest that a total of 44% of respondents were not sure whether mobile loans led to a rise in non-performing loans or not. A total of 50% of respondents agreed that mobile loans improved Atlas Mara's profits. A total of 40% of respondents said that mobile lending's use of credit scoring had increased revenues. At least 35% of respondents thought that loan defaults actually happen. Further, 37% of those surveyed attested to the bank's efforts to reduce mobile loan default. In response to the question of whether mobile loans would increase the bank's credit risk, 25% of the respondents disagreed. Forty six percent (46%) of the respondents were undecided when asked if the 30-day repayment period for mobile loans might be extended. Forty percent (40%) of respondents were not sure whether the likelihood of default on mobile loans was higher than that with conventional loans. When asked if mobile loans were repaid on time, 38% of respondents said they were not. A total of 52% of respondents claimed that when the bank got involved, mobile loans were paid back.

Table 5: Descriptive statistics for mobile loans and financial performance of Atlas Mara

Mobile Loans Variables	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	Std. Dev
Use of mobile loan platforms increases the nonperforming loan portfolio.	6	29	44	18	4	2.9	0.9
Mobile loans have led to increased profitability of commercial banks.	0	2	22	50	27	4.0	0.8
Use of credit scoring systems has increased the revenue generated from mobile loans.	3	8	24	40	25	3.8	1.0
Presence of well-defined repayment mobile loan periods has boosted commercial banks income.	5	9	28	35	23	3.6	1.1
Commercial banks have put measures in place to reduce default patterns	2	7	24	37	30	3.8	1.0

Use of mobile loan systems increases the risk profile, for commercial banks	29	29	29	9	4	2.3	1.1
Mobile loan customers delay to repay by less than 30 days	2	21	46	23	7	2.2	0.9
The probability of default is higher for mobile loans compared to other loans.	4	18	40	30	8	2.0	0.7
Mobile loan clients always pay on time	24	38	31	7	1	3.1	0.9
Mobile loan borrowers usually make the payment before the intervention measures.	24	52	22	2	0	3.2	1.0
Overall Mean						**3.1**	**0.9**

Key: SD- Strongly Disagree, D-Disagree, N- Neutral, A- Agree, SA- Strongly Agree, St Dev-Standard Deviation

The correlation coefficient was used to determine the degree and direction of a linear link between two independent variables.

Table 6: Correlation of mobile loans and bank financial performance

Correlations		ROA	Mobile Loans
ROA	Pearson Correlation Sig. (2-tailed)	1	0.531** 0.002
	N	256	256
	Pearson Correlation Sig. (2-tailed)	0.531** 0.002	1
Mobile loans	N	256	256

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

The results in Table 6 showed a moderate relationship between the independent factors. At the 0.05 level of significance, the association (r= 0.531**, p<0.05) was significant. These results suggest a positive correlation between mobile loans and commercial banks' financial performance.

The summary results from the regression model are shown in Table 7. The results show a weak positive correlation (R^2 = 0.531) between mobile loans and the financial performance of Atlas Mara. The results concur with Yousof's (2018) assertion that mobile banking has a direct and considerable impact on commercial banks' performance. According to the R^2, the model explained 28.22% of the performance variation.

Table 7: Model summary for mobile loans and bank financial performance

Model	R	R Square	Adjusted R Square	R Std. Error of the Estimate	Durbin-Watson
1	0.531[a]	0.282	0.279	0.82795	1.270

a. Predictors: (Constant), Mobile loans
b. Dependent Variable: ROA

Table 8 presents the ANOVA for mobile loans and financial performance of Atlas Mara Zambia.

Table 8: ANOVA for mobile loans and bank financial performance

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	68.381	1	68.381	99.754	0.000[b]
1	Residual	174.116	254	0.685		
	Total	242.496	255			

a. Dependent Variable: ROA
b. Predictors: (Constant), Mobile loans

The regression equation based on Table 9 implies that constant performance of banking institutions is at 2.413 units before the influence of factors associated with mobile banking. But a unit increase in financial accessibility leads to 0.953 unit increase in the financial performance of the banking sector.

Table 9: Regression coefficients for mobile loans and bank financial performance

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower	Upper Bound
(Constant)	2.413	0.396		6.093	0.002	-0.366	1.193
1 Mobile loans	0.953	0.095	0.531	9.988	0.000	0.765	1.141

a. Dependent Variable: ROA

Based on the findings of the correlation coefficients, the following regression model was developed:
$Y = 2.413 + 0.953X_2$……………………………………………………………..Equation II

Effect of Mobile Banking Risks on Financial Performance of Atlas Mara

Table 10 displays the results of the descriptive analysis. The results in Table 11 showed a weak negative correlation between mobile risks and bank financial performance ($r = -0.325$). The study is in line with Olongo's (2013) findings, which demonstrate that fraud loss significantly affects banks' ROA with a negative connection. The study backs up earlier claims made by Kamande, Kiragu and Musumba (2018) that commercial banks must address security issues in light of the rising number of occurrences of online banking fraud.

Table 10: Descriptive statistics for mobile risks' effect on bank financial performance

Mobile Banking Risks Variables	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	Std. Dev
Due to poor network of mobile, some areas may take a lot of time to do transactions through mobile banking	5	10	32	33	20	3.5	1.1
When transferring money through mobile banking the users are afraid that they will lose money due carelessness and mistakes.	3	7	31	38	20	3.7	1.0
There are backdoor attacks that allow secret entry points into the mobile banking programs	4	16	36	35	9	3.3	1.0
There is the presence of spywares which gather information from our mobile banking platform systems	6	13	30	36	15	3.4	1.1
Radical programmers break into our web servers to replace information with unwanted content	15	36	38	10	2	2.5	0.9
There is threat of criminal deception by system administrators for financial gain	6	18	44	24	8	3.2	1.6
There are radical programmers who steal mobile banking PINs and codes	17	28	31	18	6	2.7	1.1
There is unauthorised Access of former employees using old passwords to gain unauthorised access to our mobile banking system	17	28	31	18	6	2.7	1.1
There are unauthorized persons gaining access to mobile banking systems when the users carelessly leave their computers	15	23	30	22	10	2.9	1.2
There is criminal deception by customers	6	17	33	31	14	3.3	1.1
Overall mean						**3.2**	**1.1**

Key: SD - Strongly Disagree, D- Disagree, N-Neutral, A-Agree, SA-Strongly Agree, Std Dev-Standard Deviation

The correlation was also found to be significant ($p<0.05$) at the 5% level of significance, showing that our model's presumptions regarding the independent variable were accurate.

Table 11: Correlation of mobile banking risks and bank financial performance

Correlations		ROA	Mobile Loans
ROA	Pearson Correlation	1	-0.325[**]
	Sig. (2-tailed)		0.000
	N	256	256
	Pearson Correlation	-0.325[**]	1
	Sig. (2-tailed)	0.000	
Mobile banking risks	N	256	256

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

Table 12 shows the regression model summary results. The results show that the independent variables had a moderate positive correlation with the financial performance of commercial banks (R squared = 0.106). The model accounted for 10.6% of the variance in performance as shown by the R2.

Table 12: Model summary for mobile banking risks and bank financial performance

Model	R	R Square	Adjusted R Square	R Std. Error of the Estimate	Durbin-Watson
1	0.325[a]	0.106	0.102	1.33969	2.248

a. Predictors: (Constant), Mobile Banking Risks
b. Dependent Variable: ROA

Table 13 presents the ANOVA for mobile banking risks and financial performance of Atlas Mara Zambia.

Table 13: ANOVA for mobile banking risks and bank financial performance

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	53.878	1	53.878	30.019	0.000[b]
1	Residual	455.872	254	1.795		
	Total	509.750	255			

a. Dependent Variable: ROA
b. Predictors: (Constant), Mobile banking risks

Table 14 shows the results of the regression coefficients.

Table 14: Regression coefficients for mobile banking risks vs. bank financial performance

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower	Upper Bound
(Constant)	3.383	0.167		23.300	0.000	0.355	4.212
1 Mobile banking risks	-0.323	0.059	-0.325	-5.479	0.000	-0.440	-0.207

a. Dependent Variable: ROA

$Y = 3.883 - 0.323X_3$ ……………………………………………………Equation III

The above regression equation implies that constant performance of banking institutions is at 3.883 units before the influence of factors associated with mobile banking risks. But a unit increase in mobile banking risks leads to 0.323 unit decrease in the financial performance of the banking sector. Table 15 presents the summary of hypotheses tests of the entire study.

Table 15: Summary of hypotheses testing

No.	Null hypothesis	Correlation	p-value	Decision	Direction of effect
i.	Mobile banking access has no effect on financial performance of commercial banks	0.677	0.000	Reject	Positive
ii.	Mobile banking loans have no effect on financial performance of commercial banks	0.531	0.000	Reject	Positive
iii.	Mobile banking risks have no effect on financial performance of commercial banks	**-0.325**	0.000	Reject	**Negative**

Source: Author's compilation (2023)

VI.   SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

The study discovered that there is a rather high positive link between commercial banks' financial success and their ability to use mobile banking (r = 0.677, p<0.05). Additionally, regression analysis demonstrated a significant association (R^2 = 0.458, p<0.05) between the two variables. According to the ANOVA coefficients, a unit increase in mobile banking access led to a 0.629 unit increase in commercial banks' performance. Therefore, it could be argued that mobile banking's success was largely due to its 24/7 availability, shorter transaction times, ease of use, reduction of physical barriers to conducting financial transactions, including in remote areas, and overall goal of service delivery in financial transactions.

The study revealed that mobile banking loans affected financial performance positively. The findings pointed to a very slender positive association. The results are significant at a 5% significance level according to the Pearson correlation coefficient value of 0.531 and the significance level of 0.05. Overall, the results showed that banks are rapidly inventing digital lending platforms as a substitute to offer customers loans more quickly.

The results showed a substantial inverse association between commercial banks' financial performance and mobile banking risks. The results are significant at the 5% level of significance based on the Pearson correlation coefficient, which was -0.325, and the significance level of 0.05. The R value of 0.106 demonstrates that a unit increase in mobile banking risks caused a unit loss in commercial banks' financial performance of 10.6%.

Conclusions

Mobile banking access and financial performance of commercial banks have a fairly strong positive correlation (r = 0.677, p<0.05). The Pearson correlation coefficient value was 0.531 and p<0.05, implying a significance of the findings at 5% level, suggesting a very weak positive correlation between mobile banking loans and financial performance. A significant negative relationship between mobile banking risks and financial performance of commercial banks was found to exist. The Pearson correlation coefficient value was -0.325 and the significate level p< 0.05 implying significance of the findings at 5% significance level. The results showed that mobile banking has a favourable and considerable impact on Atlas Mara Zambia's financial performance. Mobile banking is anticipated to keep expanding as more people utilise mobile services overall. Customers benefit from improved convenience thanks to mobile banking because it enables them to do chores "on the go." However, there is a need to remove any obstacles that may be in the way of clients' quicker access to mobile banking. This study's findings suggest that commercial banks will experience improved financial performance as they expand their mobile banking coverage, raise consumer awareness of the benefits of mobile banking, educate them about its uses, and lessen the risks and threats associated with it. The results showed a moderately substantial association between mobile loans, such as transactions made through bank lending apps, and the financial health of commercial banks. Accordingly, the study's conclusion is that a large number of customers are taking advantage of the digital loans that banks are offering. This presents a chance for the banks to strengthen digital lending as the next strategic source of competitive performance in the bank's loan portfolio.

The results demonstrated that there were numerous risks associated with mobile banking. The risks can be divided into two categories: internal risks, which are typically launched by bank insiders, and external risks, which are launched by outside attackers against financial systems, including those used by bank customers. The study comes to the conclusion that while mobile banking has improved the financial performance of commercial banks, its future growth is threatened by the risks linked with the Internet and technological advances.

Recommendations

To get maximum benefits from mobile banking innovation, and arising from the findings and analysis of the study results, the following recommendations are made:

i.   The study suggests that commercial banks should focus beyond enhanced accessibility and begin evaluating the effectiveness of customer service offered by mobile banking.
ii. Commercial banks should deploy adequate resources in conducting research that could aid product innovation on existing mobile banking platforms.
iii. Stakeholders in the mobile banking sector need to invest in regular cybersecurity awareness training for employees to educate them not to click on links or open attachments received from untrusted sources.

REFERENCES

1. Al-Jabri, I., & Sohail, M.S. (2012). Mobile banking adoption: Application of diffusion of innovation theory. *Journal of Electronic Commerce Research*, *13*(4), 379-391.
2. Aziz, R.A., Badrawy, R.E., & Hussien, M.I. (2014). ATM, internet banking and mobile banking services in a digital environment: The Egyptian banking industry. *International Journal of Computer Applications, 90*, 45-52.
3. Bagudu, H.D., Mohd Khan, S.J., & Roslan, A.H., (2017). The effect of mobile banking on the performance of commercial banks in Nigeria. *International Research Journal of Management, IT & Social Sciences, 4*(2), 71-76.
4. De Vaus, D. (2016). *Survey research*. In: Tony Greenfield and Sue Greener (Ed.), Research methods for postgraduates: 3rd ed., pp. 202-213.
5. Gurley, J.G., & Shaw, E.S. (1960). *Money in a theory of finance*. Brookings.
6. Handema, M., & Haabazoka, L. (2020). The effect of capital structure management on commercial bank financial performance: A case of the Zambian banking sector. In: *Scientific and Technical Revolution: Yesterday, Today and Tomorrow,* pp. 1716-1736. Springer International Publishing.
7. Heinle, M. S., & Verrecchia, R. E. (2016). Bias and the commitment to disclosure. *Management Science*, *62*(10), 2859-2870.
8. Kamande R.W; Kiragu D.N, & Musumba G. (2018). Internal controls, staff red flags and computerized financial frauds among commercial banks in Kenya. *International Journal of Economics, Commerce and Management.VI*(5), 95-111.
9. Katema, S., & Lungu, D. (2019). An investigation of factors influencing the adoption of mobile banking services among bank customers: A case of Kitwe district. *The International Journal of Multi-Disciplinary Research.*
10. Kathuo S., Rotich, G., & Anyango, W. (2015). Effect of mobile banking on the financial performance of banking institutions In Kenya. *The Strategic Journal of Business and Change Management, 2*(98), 1440-1457.
11. Kawimbe, S., Sishumba, J., Sikazwe, W., & Saidi, L., (2022). *Assessing the impact of electronic banking on commercial banks profitability in Africa.*
12. Khrawish, H. A., & Al-Sa'di, N. M. (2011). The impact of e-banking on bank profitability: Evidence from Jordan. *Middle Eastern Finance and Economics*, *13*(1), 142-158.
13. Kithaka, E. (2014). *The effect of mobile banking on the financial Performance of commercial banks in Kenya*. Unpublished MBA Thesis, University of Nairobi.
14. Larina, L. B., Postnikova, D. D., Ageeva, O. A., & Haabazoka, L. (2021). The scientific and methodological approach to provision and evaluation of the digital economy's global competitiveness. *Popkova EG, Krivtsov A., Bogoviz AV The Institutional Foundations of the Digital Economy in the 21st Century. Berlin, Boston: De Gruyter*, 173-182.
15. Leibenstein, H. (1994). Allocative efficiency vs. "X-Efficiency". *American Economic Association*, 392-415.
16. Lusaya, S., & Kalumba, B. (2018). The challenges of adopting the use of e-banking to the customers: The case of Kasama district banking customers. *Scholar Journal of Applied Sciences and Research, 1*(2), 26-31.
17. Mensi, S. (2010). Efficient structure versus market. *International Journal of Economics and Finance, 2*(4), 1-17.
18. Migdadi, Y.K.A.A. (2012). The order winners' operations strategy of mobile phone service providers in developing economies: The case of Jordan. *International Journal of Services and Operations Management, 13*(3), 329-360.
19. Morgun, T. N., Ibraimova, S. M., Haabazoka, L., & Makhmudov, U. A. (2021). 21 The institutional model of well-balanced and sustainable digital economy. *The Institutional Foundations of the Digital Economy in the 21st Century*, *3*, 193.
20. Muisyo, J. M., Alala, O., & Musiega, D. (2014). The effects of mobile money services on the performance of the banking institutions: A case of Kakamega town. *Transactions*, *354*(16,700,000), 4-600.
21. Mungai, M. D. (2019). Mobile banking services & financial performance of tier one commercial banks in Kenya. *International Academic Journal of Economics and Finance, 3*(4), 5.
22. Mutua, R. W. (2013). *Effects of mobile banking on the financial performance of commercial banks in Kenya.* Doctoral Dissertation, University of Nairobi.
23. Mwamba, A.L. (2019). *The right to work of migrants and the challenges of accessing the labour market in South Africa*. Unpublished Dissertation – University of Pretoria.

24. Mwiya, B., Chikumbi, F., Shikaputo, C., Kabala, E., Kaulung'ombe, B., & Siachinji, B. (2017). *Examining factors influencing e-banking adoption: evidence from bank customers in Zambia*. Available at: SSRN 2987982.
25. Nzongang, T., & Atemnkeng, J. (2006). *Market structure and profitability performance in the banking industry of CFA countries: The case of commercial banks in Cameroon*.
26. Olongo, F. O. (2013). *The effects of financial fraud and liquidity on financial performance of commercial banks in Kenya*. Doctoral Dissertation, University of Nairobi.
27. Orr, G. (2003). *Diffusion of innovations*, by Everett Rogers (1995). *Academia, 2*, pp. 1-8.
28. Phiri, H. (2020). *The effectiveness of e-banking services on bank customers at Investrust Bank Plc. Bachelors' dissertation*. St Eugene, DMI University.
29. Polit DF, Beck CT, & Hungler BP. (2006). *Essentials of nursing research: Methods, appraisal, and utilization*. 6. New York, NY: Lippincott.
30. Popkova, E. G., & Haabazoka, L. (2019). The cyber economy as an outcome of digital modernization based on the breakthrough technologies of industry 4.0. *The Cyber Economy: Opportunities and Challenges for Artificial Intelligence in the Digital Workplace*, 3-10.
31. Rodgers, E. M. (2003). *Diffusion on innovations*. (5th ed.). New York: Free Press.
32. Siedlecki, S. L. (2020). Understanding descriptive research designs and methods. *Clinical Nurse Specialist, 34*(1), 8-12.
33. Standard Chartered Bank. (2022). *Annual report*. Available at: https://www.sc.com/en/investors/financial-results/annual-report-2022/.
34. Yankovskaya, V. V., Osavelyuk, E. A., Inozemtsev, M. I., & Haabazoka, L. (2021). *The existing and perspective international institutions for supporting digital transformation of economy*. In: EG Popkova, & A. Krivtsov (Eds.), The institutional foundation of the digital economy in the 21st century. De Gruyter.
35. Yousof, A.D. (2018). The effect of mobile banking on loans granted by commercial banks in Kenya. *Journal of Finance and Economics, 16*(52), 121-126.
36. Zulu, S. (2021). *StanChart leads the way in digital transformation*. Available at: https://www.techtrends.co.zm/stanchart-leads-the-way-in-digital-transformation/. [Accessed 23rd November 2021].