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Financial Inclusion in Lusaka: An analysis on the effects of mobile money on Traditional Banks

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ABSTRACT

This study examined the effects of mobile money services, in particular MTN and Airtel Money, on the performance of commercial banks in Lusaka, it's focus was on their impact on transaction volumes, customer behavior, and revenue streams. This research used a mixed-methods approach that employed both quantitative and qualitative data collection. Quantitative data were obtained through structured questionnaires administered to members of the general public, mobile money agents, and bank customers, while qualitative data were gathered through questionnaires and semi-structured interviews with the general public and mobile money service providers. Stratified random and purposive sampling techniques were employed to ensure diverse representation across socio-economic groups. Descriptive results show that mobile money overwhelmingly dominates daily financial activity, with 83 percent of respondents using mobile money daily compared to only 8 percent who use banks daily, and 82 percent reported reduced bank usage due to mobile money. Regression analysis indicates that sending money through mobile money significantly reduces bank transaction volumes ($\beta = -2.1534$, $p = 0.001$), while receiving money and overall transaction frequency show no significant effect at the 95 percent confidence level. The findings reveal that both banked and unbanked individuals rely primarily on mobile money for their daily financial needs, as reflected in the high overall rate of daily usage, and regression results show that banking status does not significantly increase the likelihood of using bank services, indicating that mobile money remains the dominant financial tool regardless of whether individuals hold bank accounts. Finally, the ordered logistic regression model assessing revenue-related transactional behavior is statistically significant (Wald $\chi^2 = 700.9$, $p < 0.001$; Pseudo $R^2 = 0.5702$). The results show that sending through both bank and mobile ($\beta = -19.61$, $p = 0.000$), withdrawing using both systems ($\beta = -4.23$, $p = 0.017$) significantly reduce bank transaction revenue, and saving through both ($\beta = 1.803$, $p = 0.207$) and loan access ($\beta = 1.44$; 0.272) insignificantly increase bank transaction frequencies that generate revenue, while bill payments ($\beta = 0.84$; $p = 0.612$), receiving money ($\beta = 1.22$, $p = 0.664$), show no significant effect. Overall, the findings demonstrate that mobile money has displaced low-value bank transactions.

1. Introduction

1.1 Background

The money in Zambia is changing because of mobile money services like MTN Money, Airtel Money and Zamtel Money. These services are becoming very popular. People are using them instead of traditional banks. People can use their phones to send money get money and keep money without having to go to a bank. The Bank of Zambia says that this is happening because more people have phones and the government is making it easier for people to access financial services. The Bank of Zambia said this in the year 2023. Mobile money services, like MTN Money, Airtel Money and Zamtel Money are really changing the way people handle money in Zambia.

MTN Money started in Uganda. Then it went to other countries in Africa. It came to Zambia in 2009. People in areas and those who do not have a lot of money liked using MTN Money.

Airtel Money came next. It did basically the same thing as MTN Money. It wanted to be an alternative to MTN Money. MTN Money and Airtel Money have made things tough for banks. Before regular banks were in charge of everything related to money

like when people put money in their accounts took money out borrowed money and sent money to people.
MTN Money and Airtel Money are good because they are fast, cheap and easy to use. This is good for some people. It also makes some people in the banking business a little worried, about what will happen to regular banks. MTN Money and Airtel Money are changing the way people do things with their money. Mobile money has really helped people get access to financial services. At the time it has changed the way traditional banks work. People do not need to go to bank branches as much as they used to. They also do not use bank products as much as they used to. This change means we need to look at how mobile money's affecting commercial banks. We need to see how it is changing the amount of money people deposit the number of transactions the types of financial services people. How banks operate overall. Mobile money is clearly having an impact, on banks and we need to understand what that impact is.

1.2 Problem Statement

People in Zambia are using mobile money services like MTN Money and Airtel Money more and more. Mobile money services are really changing things in Zambia. They are changing the way people in Zambia handle their money. Now people in Zambia have another option to use besides the banks. The Bank of Zambia said that a lot of people in Zambia are using mobile money services to pay for things and save money and send money to others in 2023.
Mobile money services like MTN Money and Airtel Money are making it easy for people, in Zambia to do these things. People are using phones a lot these days. This is making it possible for everyone to get financial services. Mobile money is growing fast like the GSMA said in 2022. There are services like MTN Money and Airtel Money that are making things easier for people. They are making it easy for people to use these services. At the same time these mobile money services are causing some problems for the commercial banks. Banks have always made money from people who put their money in the bank. They charge fees when people move their money around. They also make money from loans and things like that. Mobile money services, like MTN Money and Airtel Money are changing the way people use services. Now mobile money operators are doing some things that make people worry. People are worried that banks will have money because people are storing their money with mobile money operators. Fewer people are moving their money around. There is also less money from people sending money to each other. Mobile money is really popular in Zambia. This is something that a lot of people in Zambia use. Not many people have studied how mobile money affects the banks in Lusaka, Zambia. We can look at what's happening in other African countries, such as Kenya and Ghana. In these countries mobile money can disrupt the way banks normally work, as seen in the work of Aker and Mbiti, in 2019. Mobile money is changing the way people use banks. This is something that is happening in many places, including Zambia. Yet, the Zambian context remains underexplored, highlighting a clear knowledge gap that this research seeks to address. For policymakers, regulators, and banks, understanding this dynamic is crucial in shaping the future of Zambia's financial sector.

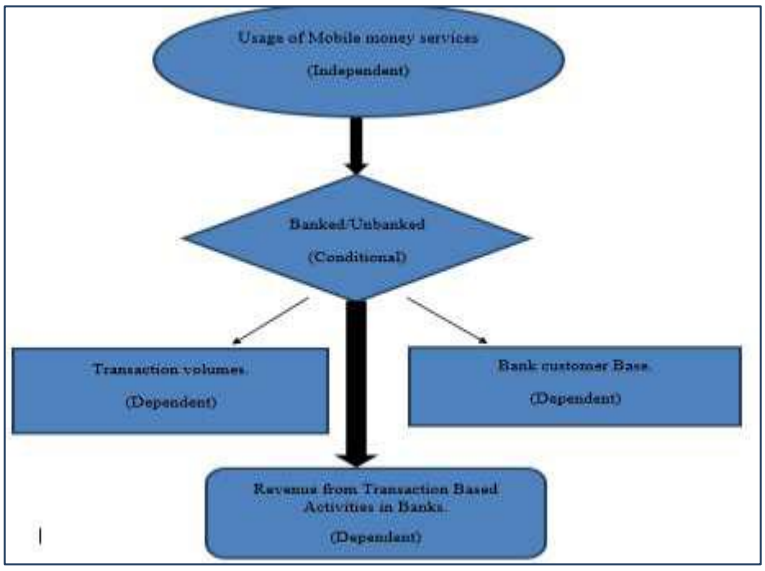
1.1 Research Objectives

i. To analyze the effects of the emergency of mobile money on the Banks transaction volumes.
ii. To analyze the level to which the banked and unbaked Lusaka population use mobile money as a tool for their primary financial services.
iii. To analyze the effects of the emergence of mobile money on the Banks transaction-based revenue.

1.2 Research Questions

i. Has the emergence of mobile money reduced bank transaction volumes?
ii. Does both the banked and unbanked population in Lusaka use mobile money services on a daily basis?
iii. Has the emergency of mobile money reduced bank transaction revenue streams?

1.3 Conceptual Framework



In the figure above the use of mobile money services is the independent variables, the dependent variables include Transaction Volumes, Bank Customer Base and Revenue from transaction-based activities, while banked and unbanked serves as a conditional variable. It is expected that when people prefer mobile money to traditional banks, the banks transaction volumes will reduce, if both banked and unbanked prefer transacting with mobile money it is expected that banks transaction based revenue will reduce, its also expected the if the unbaked maintain the stance of not seeing the need to open a traditional or official bank account the bank customer base will reduce as the population grows, thus the extent to which the unbanked population use mobile money as the primary financial tool will increase.

2. Literature Review

2.1 Mobile money and services and product offerings

The coming pf Mobile money has changed the global financial industry, most especially in developing countries. Services have now extended beyond person-to-person transfers to include paying bills, to include savings, to include offering credit, and also insurance (GSMA, 2023). Examples from Asia, such as GCash in the Philippines and bKash in Bangladesh, show how these platforms integrate daily financial services like paying bills and offering loans (Uy, 2020; Hasan et al., 2021). Also, in Latin America, platforms like Mercado Pago and Tigo Money have become part of users' everyday routines (Delgado & Singh, 2021).

Further, Sub-Saharan Africa remains the global leader in mobile money adoption, with Kenya's M-Pesa often cited as a success story for achieving much growth beyond transfers to offer credit and savings products (Jack & Suri, 2014; Mbiti & Weil, 2016). Other countries such as Tanzania, Uganda, and Ghana show similar patterns, where mobile money has moved from simple sending and receiving money to more advanced financial services (IFC, 2020; Bank of Ghana, 2022).

Surprisingly in Zambia, MTN Money and Airtel Money dominate the market. They now provide services ranging from paying bills to customer transactions, reflecting a diversification that aligns with global trends (Bank of Zambia, 2023; ZICTA, 2022). However, most local studies remain descriptive, focusing on product variety rather than examining how these offerings directly influence banking operations (Mwansa & Nyirenda, 2021; Chikumba & Musonda, 2021).

2.2 Mobile Money and Transaction Volumes

Mobile money platforms are changing things on a level. They are helping people make lots of payments that banks did not used to handle. Now mobile money platforms are taking care of these payments. Mobile money platforms have really increased the number of transactions. This is because people can now make payments using mobile money platforms. For example mobile wallets are making it easy for people to make small payments like buying things from shops. Mobile wallets are also making it easy for people to pay for things using their phones. This is making it easier for people to use money. Mobile money platforms are making financial things easier for people to do. However, studies also warn that these volumes that are conducted and that customers are mainly performing with mobile money platforms may substitute, rather than complement, banking transactions (Aker & Mbiti, 2019). At reaching the African level, research shows that mobile money boosts the overall number of transactions, but much of this activity occurs outside commercial banks. For example, in Kenya, M-Pesa significantly raised transaction volumes, while Ghana and Tanzania experienced similar patterns of increased domestic transfers and payments (Mbiti & Weil, 2016; Aryeetey & Baah-Boateng, 2018; Kikulwe et al., 2014). In Zambia, mobile money has enabled wider access through agent networks, especially in rural and peri-urban areas, but studies rarely connect these increases directly to changes in banks' transaction volumes (Ngoma & Chirwa, 2022). However if you check the Bank of Zambia (2023) highlights there is exponential growth in mobile money transactions.

2.3 Financial Inclusion and Adoption.

Mobile money is widely recognized as a driver of financial inclusion, especially among unbanked populations (Demirgüç-Kunt et al., 2018; World Bank, 2021). Studies confirm that mobile wallets help poor and rural populations access financial services previously out of reach (Suri & Jack, 2016; Aker & Mbiti, 2019). Demographic factors such as age, gender, and education significantly influence adoption, with youth and women often using mobile money as their main financial tool (Kikulwe et al., 2014; Aryeetey & Baah-Boateng, 2018).

In the case of Africa, mobile money adoption is highest globally, with over 500 million registered accounts (GSMA, 2022). Kenya, Ghana, and Tanzania demonstrate how mobile money serves as the primary financial service for many unbanked individuals (Mbiti & Weil, 2016; Boateng et al., 2020).

In Zambia, mobile money penetration has grown rapidly, reaching large unbanked populations, particularly in rural areas (Mwansa & Nyirenda, 2021). Local studies also highlight that youth and women rely heavily on mobile money, reflecting regional patterns (Ngoma & Chirwa, 2022). However, research often overlooks how adoption differs between banked and unbanked populations, limiting insights into its impact on commercial banks (Chikumba & Musonda, 2021).

2.4 Mobile money and Bank Revenue Streams

On a Global level the emergency of mobile money has disrupted banks' traditional revenue models by reducing income from transaction fees (World Bank, 2020; Zhao & Belk, 2018). Platforms like PayPal and Alipay have forced banks to rethink their strategies (Gomber et al., 2017).

In Africa, M-Pesa and MTN Mobile Money have reduced banks' reliance on fee-based services, pushing them to innovate or partner with fintech providers (Ngugi et al., 2014; Boateng et al., 2020).

At the Zambian level the evidence is more descriptive. While usage of Airtel Money and MTN Money is widespread, most studies do not provide clear data on their impact on bank revenues (Mwansa & Nyirenda, 2021; Kalaluka & Banda, 2020). Some research

suggests that mobile money provides convenience and affordability that could challenge banks' fee-based income, but empirical evidence on revenue loss remains absent (Simataa & Mwale, 2020; Ngoma & Chirwa, 2022).

3. Methodology

3.1 Research Design

A descriptive research design was adopted for the study, which was appropriate to study mobile money services, usage trends, and their impacts on bank revenues without manipulating the natural setting. This design supported both quantitative and qualitative data.

3.2 Target Population

The target populations were commercial banks in Lusaka, mobile money service providers like MTN and Airtel, bank customers in Lusaka, and mobile money agents in Lusaka. The population targeted by this study, therefore, included commercial banks in Zambia, mobile money service providers like MTN and Airtel, bank customers in both urban and peri-urban areas of Lusaka, and Mobile Money Agents (Sekaran & Bougie, 2016).

3.3 Sampling Design and Sample Size

The study used a way to choose people to talk to, which fit with what the study was trying to do. The people the study was looking at were money agents and people who regularly use mobile money services. For the study 80 people were chosen to take part this number was picked because of a rule that helps make sure the results are accurate. Out of these 80 people 60 were chosen from the public they were picked at random so the results of the study would be based on facts and numbers mobile money services were a key part of the study and mobile money agents were also important, to the study. From these, 20 mobile money agents were selected based on saturation theory, wherein interviews continued until no new information came out.

3.5 Data Collection Methods

The research used information that was collected directly from people. This information was gathered using a questionnaire that had two parts. One part had set questions to get numbers and facts about how people use money how they do their banking and what they think about how mobile money affects commercial banks. The people who answered these questions were individuals from the public. The research was focused on money and its effects, on commercial banks. Mobile money was a part of the study to see how it is used by the general public and how it affects commercial banks. Semi-structured interviews with the mobile money agents and a few who for one reason or another could not complete the questionnaire due to time constraints added qualitative information on the operations, customer experiences, and perceived interactions between mobile money services and the banking sector. This mixed approach thus meant that both measurable and explanatory data relevant to the study objectives were obtained.

3.6 Data Analysis

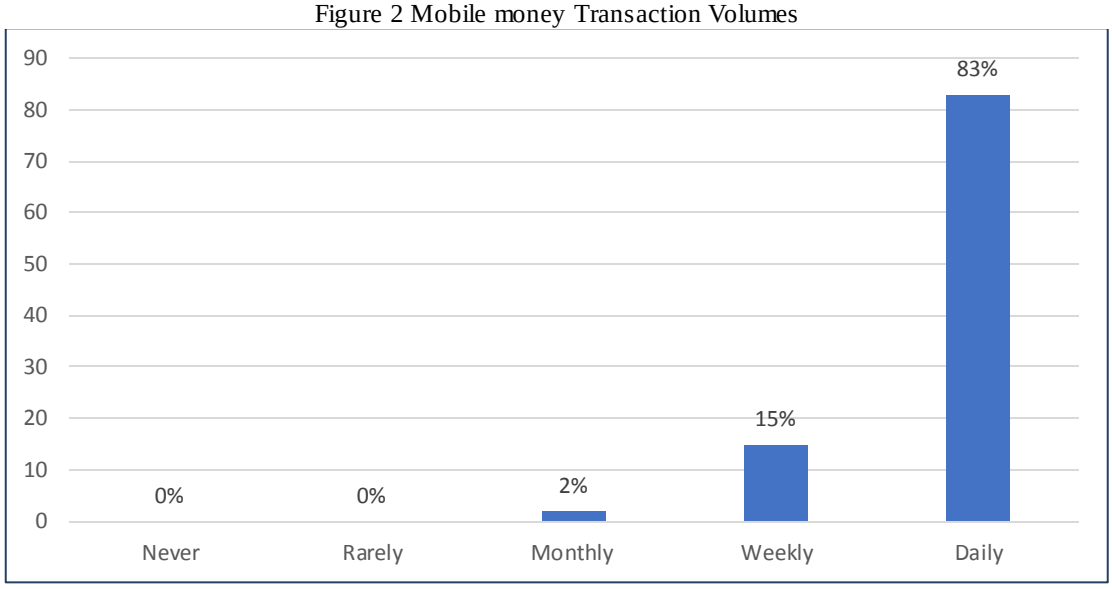
Quantitative data from the questionnaires was analyzed using descriptive statistics and regression analysis. The statistical data analysis was done using Stata and Excel software. Qualitative data from interviews were transcribed, coded, and analyzed thematically for patterns and narratives that complement the quantitative findings as guided by Creswell (2014).

4. Results and Discussions

4.1 The effects of Mobile Money use on Transactional Volumes of the Banking Sector.

4.1.1 Transaction volumes using mobile money.

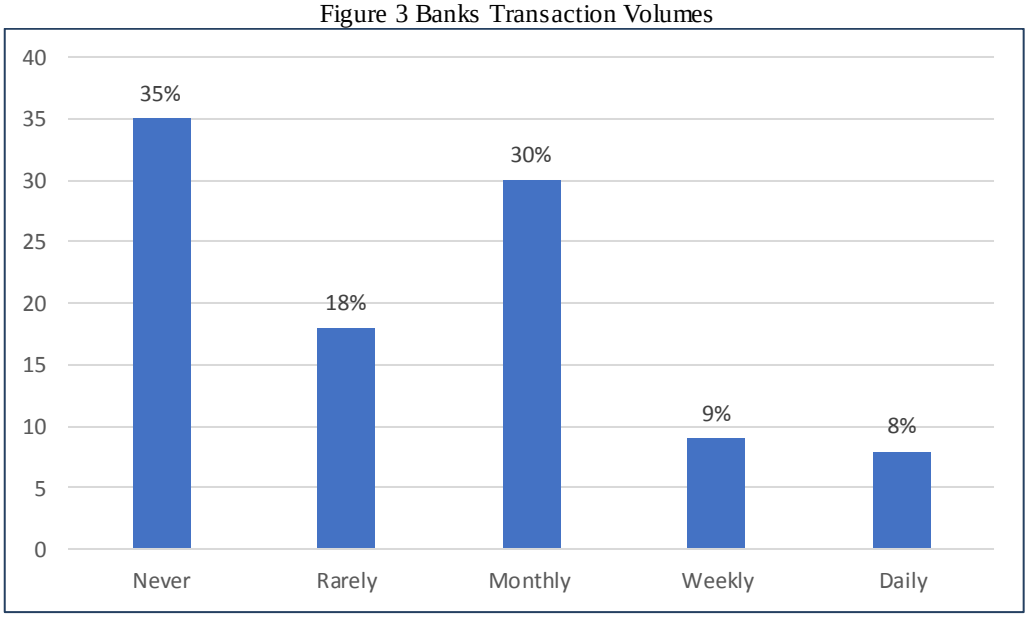
Figure 2 Mobile money Transaction Volumes



The figure above shows that a huge majority of 83% were reported using mobile money on a daily basis, showing its high adoption and reliance for routine transactions. Meanwhile, 15% of respondents used the service weekly, showing occasional but regular use of mobile money. A small minority, 2%, transacted monthly, while none of the respondents were reported be have been using mobile money rarely or never.

4.1.2 People's Transaction volumes using Banks

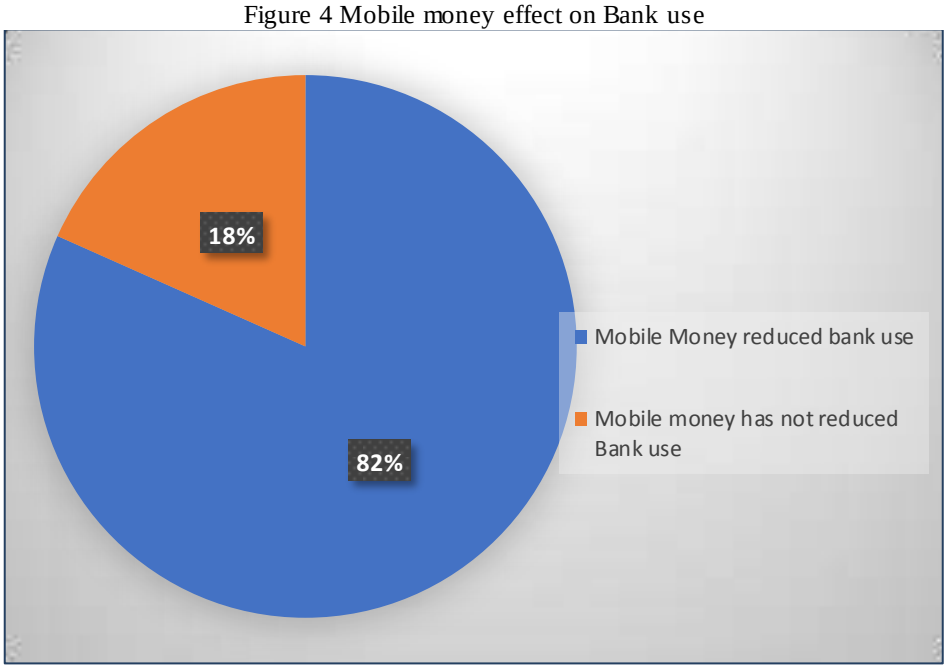
Figure 3 Banks Transaction Volumes



The diagram above shows peoples transaction volumes using Traditional Banks, only 8% of respondents reported using bank services daily, while 9% engaged weekly. Monthly use accounted for 30% of respondents indicating moderate periodic use of Traditional Banks. A notable proportion used banks rarely, that is, 18%, and the largest share of 35% reported never using bank services. These findings suggest that while banks remain relevant for some, a significant portion of the population either uses them infrequently or not at all. The analysis of bank transaction frequency shows that traditional banking is used less regularly compared to mobile money.

4.1.3 Has mobile money reduced bank use?

Figure 4 Mobile money effect on Bank use



From the figure above the findings show that mobile money has significantly influenced the use of traditional banking services. 82% of the respondents agreed that mobile money has reduced their reliance on banks showing that mobile money financial services are increasingly substituting conventional banking for everyday transactions. 18% of respondents felt that mobile money has not affected their use of banks, suggesting that a small segment still maintains regular engagement with traditional banking.

4.1.4 Regression analysis for transaction volumes

Table 1 Regression Analysis for Transaction Volumes

```
. reg bbanktransaction bmobilemoneytransactions smobileonly sboth rmobileonly rboth pbmobileonly pbboth

      Source |       SS           df       MS      Number of obs   =        60
-------------+----------------------------------   F(7, 52)        =      9.98
       Model |  54.987773         7  7.85539615   Prob > F        =    0.0000
    Residual |  40.9455603        52  .787414621   R-squared       =    0.5732
-------------+----------------------------------   Adj R-squared   =    0.5157
       Total |  95.9333333        59  1.6259887   Root MSE        =    .88736

------------------------------------------------------------------------------
bbanktransaction |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----------------+------------------------------------------------------------
bmobilemoneytransactions |   .2908395   .277931     1.05   0.300    -.2668698    .8485488
             smobileonly |  -2.153388   .6198828   -3.47   0.001    -3.397274   -.9095023
                   sboth |  -.7081598    .819338   -0.86   0.391    -2.352282    .9359621
             rmobileonly |  -.6176412   .3947053   -1.56   0.124    -1.409675    .1743929
                   rboth |  -1.144018   .8402319   -1.36   0.179    -2.830067    .5420306
             pbmobileonly |  -.9266506   .4120054   -2.25   0.029      -1.7534   -.0999012
                   pbboth |   .3012104   .6872718    0.44   0.663    -1.077901    1.680322
                    _cons |    4.05451   1.372371    2.95   0.005     1.300645    6.808375
------------------------------------------------------------------------------
```

Sending Money Using Mobile Money Only (smobileonly) with β = –2.1534 and p = 0.001: Sending money using mobile money only has a negative and significant coefficient of 2.25, which means that customers who send money using mobile money only perform 2.15 fewer units of bank transaction compared to those who rely on banks only. This shows a strong substitution effect.

Sending Money Using Both Mobile Money and Bank (sboth) with β = –0.7081, p = 0.391: Those who send money using both mobile money and banks have a negative but statistically insignificant coefficient of -0.708 showing that using both systems to send money slightly reduces bank transactions

Receiving Money Using Mobile Money Only (rmobileonly) with β = –0.6176, and p = 0.124: Receiving money using mobile money only has a negative and insignificant coefficient showing that those who receive money using mobile money platforms only on average perform 0.62 fewer bank transaction compared to those individuals who perform their transactions using traditional or official banks accounts.

Receiving Money Using Both Mobile Money and Bank (rboth) with β = –1.1440 and p = 0.179: Receiving money using both systems has a negative coefficient showing that individuals receiving money through both channels make 1.14 fewer bank transactions on average than those receiving money with the bank only. However, the relationship is statistically insignificant with a p-value of = 0.179. Although both systems are being used, the negative sign suggests mobile money still reduces bank transaction frequency, but the evidence is not strong enough to confirm a real effect.

Paying Bills Using Mobile Money Only (pmobileonly) with β = –0.9266, p = 0.029: This coefficient is negative and statistically significant at the 5% significance level with a p-value of 0.029. It means that individuals who pay bills exclusively via mobile money conduct 0.93 fewer bank transactions on average compared to those who use banks. This finding confirms that using mobile money exclusively for bill payments significantly reduces bank transaction activity.

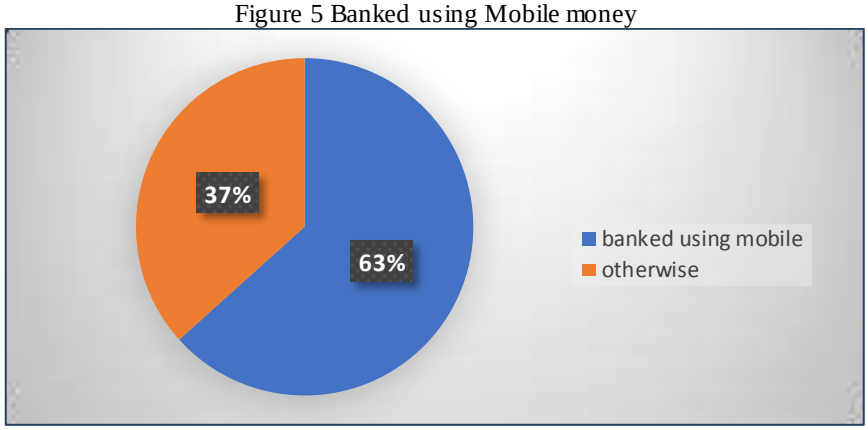
Paying Bills Using Both Mobile Money and Bank (pboth) with β = 0.3012, and p = 0.663: For paying bills using both systems the coefficient is positive and insignificant with a p-value of 0.663. This shows that individuals who use both systems to pay bills perform slightly more bank transactions, but the effect is too weak to be meaningful statistically. Although there may be complementarity between mobile money and bank use in paying bills, it is not statistically supported.

Constant Term (cons = 4.0545, p = 0.005): The constant represents the predicted value of bank transactions when all predictors are zero, which means that for a person who does not use mobile money at all the significant intercept with a p-value of 0.005 conducts about 4.05 units of bank transactions roughly between weekly and daily, showing that even without mobile money use traditional banking activity remains fairly high showing the relevance of banks among non-mobile money users.

4.2 Financial Inclusion and Mobile Money Adoption Among Lusaka people

4.2.1 Banked people using mobile money platforms

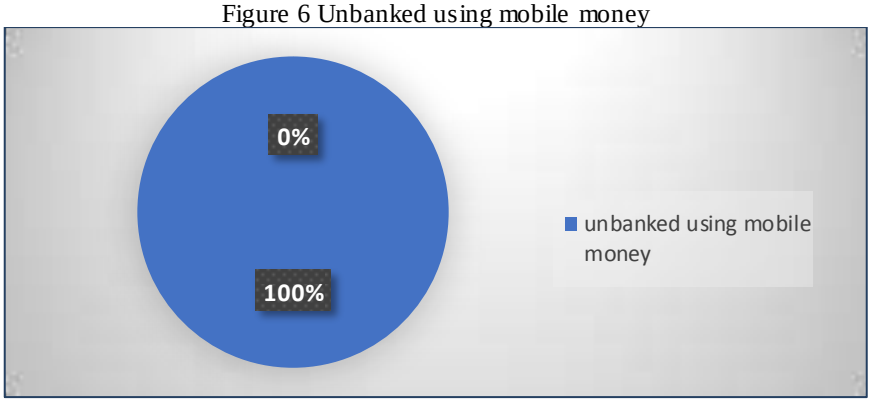
Figure 5 Banked using Mobile money



The figure above shows the adoption of mobile money among both banked individuals in Lusaka. 63% of respondents who have bank accounts still rely on mobile money for their financial transactions showing that even traditional bank customers are increasingly turning to mobile money platforms for convenience or accessibility. 37% of mobile money users do not hold bank accounts showing mobile money's role in providing financial services to the unbanked population.

4.2.2 Unbanked people who are using mobile money

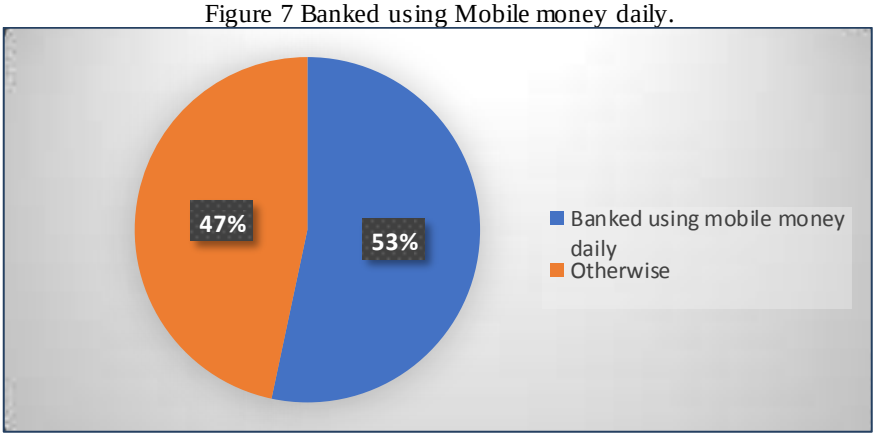
Figure 6 Unbanked using mobile money



The diagram above shows that 100% of unbanked individuals were reported to have been using mobile money services. This indicates that mobile money has achieved complete penetration among the unbanked population, serving as their primary and, in many cases, only means of accessing financial service.

4.2.3 Banked population using mobile money as their primary banking tool (Daily basis)

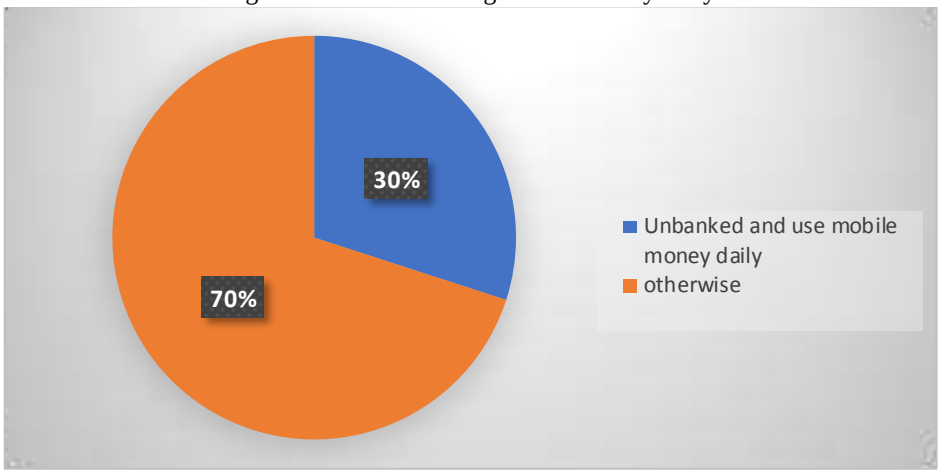
Figure 7 Banked using Mobile money daily.



From the figure above the findings show that 53% of banked individuals use mobile money on a daily basis, indicating that more than half of those with bank accounts rely on mobile money as their primary tool for financial transactions. On the other hand, 47% of banked individuals do not use mobile money daily, implying that while mobile money is highly popular because a considerable portion of bank customers still depend on traditional or official bank accounts or use mobile money less frequently.

4.2.4 Unbanked using mobile money daily

Figure 8 Unbanked using Mobile money daily



The figure above shows that 30% of unbanked individuals use mobile money on a daily basis showing that mobile money has become an essential financial service even for those without traditional bank accounts. This finding shows mobile money's critical role in promoting financial inclusion by providing accessible and convenient means for conducting transactions among the unbanked people of Lusaka. The remaining 70% of unbanked individuals use mobile money less frequently showing that while adoption is significant there is still room to expand daily usage within this group.

4.3 Mobile Money and ts effects on Bank Revenue Streams

4.3.1 Regression results using Ordinary Least squares and Ordered Logistic.

Table 2 Ordered Least Squares regression output table for revenue

```
. ologit bbanktransaction bbankandusemobiledaily smobileonly sboth rmobileonly rboth pbmobileonly pbboth wboth wmobileonly saboth samobileonl
>  lboth lmobileonly, robust

Iteration 0:   log pseudolikelihood = -87.227784
Iteration 1:   log pseudolikelihood = -46.779204
Iteration 2:   log pseudolikelihood = -40.103129
Iteration 3:   log pseudolikelihood = -37.622619
Iteration 4:   log pseudolikelihood = -37.491107
Iteration 5:   log pseudolikelihood = -37.489859
Iteration 6:   log pseudolikelihood = -37.489858

Ordered logistic regression                     Number of obs     =         60
                                                Wald chi2(13)     =     700.90
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -37.489858               Pseudo R2         =     0.5702
```

bbanktransaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
bbankandusemobiledaily	2.448921	.8500715	2.88	0.004	.7828114	4.115031
smobileonly	-21.66087	1.707396	-12.69	0.000	-25.0073	-18.31444
sboth	-19.6095	2.172803	-9.02	0.000	-23.86811	-15.35088
rmobileonly	.6845945	1.49783	0.46	0.648	-2.251099	3.620288
rboth	1.220267	2.812716	0.43	0.664	-4.292554	6.733088
pbmobileonly	-1.297485	1.219249	-1.06	0.287	-3.68717	1.0922
pbboth	.8410682	1.656403	0.51	0.612	-2.405422	4.087558
wboth	-4.233761	1.771475	-2.39	0.017	-7.705789	-.7617328
wmobileonly	-1.967653	1.578133	-1.25	0.212	-5.060736	1.125431
saboth	1.80319	1.427832	1.26	0.207	-.9953094	4.601689
samobileonly	-4.659992	1.791975	-2.60	0.009	-8.172199	-1.147785
lboth	1.444402	1.313912	1.10	0.272	-1.130818	4.019621
lmobileonly	.4132427	1.343391	0.31	0.758	-2.219756	3.046241
/cut1	-26.97825	1.843615			-30.59166	-23.36483
/cut2	-23.4225	1.539231			-26.43934	-20.40566
/cut3	-18.19952	1.161169			-20.47537	-15.92366
/cut4	-16.06526	.9505019			-17.92821	-14.20231

Given that the dependent variable is ordinal, the Ordered Logistic Regression offers a more appropriate estimation. The model results show **a** Pseudo R-squared of 0.5702 and a Wald Chi-square of 700.9 ($p < 0.001$)**,** suggesting that the model fits the data well and that the independent variables jointly have a significant influence on bank transaction frequency and revenue.

Sending Money: The Ordered Logistic results closely mirror the OLS findings but show even stronger effects. For respondents who send money using mobile money only, the coefficient is −21.66 ($p = 0.000$), while those who send using both bank and mobile platforms recorded −19.61 ($p = 0.000$). These large and significant coefficients indicate that both groups are much less likely to fall in higher transaction frequency categories, such as weekly or daily users. In other words, frequent use of mobile money for transfers sharply reduces the probability of frequent bank transactions thus reducing bank revenue in the sending money stream.

Paying Bills: The effect of paying bills through mobile money remains weak in the Ordered Logistic model. Those who pay via mobile money only recorded a coefficient of −1.30 ($p = 0.287$)**,** while those who use both systems had 0.84 ($p = 0.612$)**.** Both relationships are statistically insignificant, suggesting that mobile money's influence on bank transactions through bill payments is not yet strong enough to displace traditional methods completely thus mobile money does not affect the bank revenue from the paying bills stream.

Withdrawing Money: Consistent with the OLS results, withdrawal activities through mobile platforms have a negative association with bank transactions. The coefficient for withdrawing through both mobile money and banks is −4.23 ($p = 0.017$), which is statistically significant. This implies that individuals who rely on both systems for withdrawals are less likely to transact frequently with banks thus reducing bank revenue in the withdrawing money stream. And then mobile only withdrawals show a negative but insignificant coefficient of −1.97 with a p-value of 0.212 showing that withdrawal choices depend on convenience rather than full substitution.

Saving Money: Saving through mobile money platforms only has a negative and significant coefficient of −4.66 with a p-value of 0.009 which shows that those who rely exclusively on mobile savings services are much less likely to be frequent bank users thus reducing bank revenue in the saving stream. Surprisingly the coefficient for saving through both systems has a positive and insignificant coefficient of 1.80 and a p-value of 0.207 which means that savings is one of the ways banks are still dominant in generating revenue because using both systems incrassate bank revenue insignificantly, this stands out because it shows that mobile money is not substituting bank revenue in terms of savings.

Accessing and getting Loans: The variables representing getting or accessing loans using both systems has a positive and insignificant coefficient of 1.44 with a p-value of 0.272 for those using both systems. This stands out because it shows that banks still remain useful and loan giving remains a dominant income generating stream for the Bank.

4.4 Discussion of research findings

4.4.1 The effects of Mobile Money on Transactional Volumes in the Banking Sector

This study showed that 63 percent of respondents had bank accounts while 37 percent did not have bank accounts therby showing progress in financial inclusion but also showing the persistent gaps in traditional banking outreach. What stood out the most is that all respondents, representing up to 100 percent owned mobile money accounts showing full penetration and suggesting that mobile money has become a mainstream financial tool in Lusaka. 83% of respondents used mobile money daily compared to only 8 percent who used banks daily, with 35 percent reporting that they never use banks. These findings reveal a strong shift toward mobile-based transactions and a decline in the frequency of bank usage, indicating that mobile money is substituting rather than complementing traditional financial services in day-to-day financial activities.

These findings agree with global literature such as Aker and Mbiti 2019 and Jack and Suri 2016, who showed that mobile money platforms resulted in an overall increase in both the number of financial transactions and frequency, mainly low-value and high-frequency payments, that were previously underserved by traditional banks. In this respect, GSMA (2022) reported that mobile money systems increase the throughput of transactions within financial ecosystems through the facilitation of quick and low-priced payments for small and medium users.

This interpretation is reinforced by the regression analysis of this study. The results showed that sending money using only mobile money significantly negatively influenced bank transaction frequency ($\beta = -2.1534$, $p = 0.001$), thus confirming a substitution effect in that users who rely on mobile money alone conduct fewer bank transactions. Also, those who pay bills exclusively using mobile money had a significant negative effect ($\beta = -0.9266$, $p = 0.029$), confirming the fact that mobile money usage displaces bank usage for low-value routine transactions. These findings are consistent with Ngugi, Pelowski, and Ogembo (2014) and Munyegera and Matsumoto (2016), in that mobile money use resulted in reduced low-value bank transactions in Kenya and Tanzania, respectively.

On the contrary, the regression showed that there was a positive but insignificant relationship of $\beta = 0.2907$ at $p = 0.300$ between general mobile money usage and bank transactions, thus not strong enough to imply complementarity. It therefore means that an increase in mobile money transactions does not substantially increase bank transactions, hence mirroring the substitution hypothesis advanced by Aker and Mbiti (2019).

Regionally, there are studies such as Aryeetey and Baah-Boateng, 2018; Boateng et al., 2020, in Ghana, where, despite the increase in volumes of total digital transactions, most activities occur outside of bank-controlled systems and thus tend to crowd

bank transactions. Mobile money in Tanzania, according to Kikulwe et al. (2014), increased accessibility for transactions but decreased direct interaction with formal banks for basic payment and transfer needs.

Surprisingly the Zambian findings also show that mobile money is substituting banking transactions, especially in the activities of money transfer and bill payments. This displacement effect is also confirmed by the 82 percent of the respondents who agreed that mobile money had reduced their use of banks. However, the insignificant coefficient between mobile money and bank transactions in the regression suggests complementarity, especially in situations where users maintain accounts and rely on banks for large or institutional transactions. This result corroborates Chiu et al. (2018) and Bank of Zambia (2023), who note that mobile money and banks interact through partial integration in Zambia's payment system.

4.4.2 Financial Inclusion and Mobile Money Adoption Among Banked and Unbanked Populations

Mobile money is really popular in Lusaka. People who have bank accounts use money and so do people who do not have bank accounts. For example sixty three percent of people with bank accounts use money to do their financial things. Thirty seven percent of people who do not have bank accounts use mobile money. So mobile money is a way for people with bank accounts and people without bank accounts to do their things. Mobile money helps people with bank accounts and people without bank accounts to use both informal financial systems. Mobile money is a financial tool, for mobile money users. Moreover, 53% of the banked indicated that they use mobile money on a daily basis, one possible explanation to this is that even those with access to traditional banks still rely heavily on the mobile platforms for convenience and accessibility. Among the unbanked population, 30% reported daily use of mobile money and all confirmed owning mobile money accounts showing complete adoption among this group.

The Global Findex Database from the World Bank in 2021 says the thing. It found that mobile money is one of the things that helps people get services even if they do not have a bank account. So with money people can do basic things like make payments transfer money and save money without needing a bank account. Global studies by Demirgüç-Kunt and others also found this to be true. Mobile money is really important, for people who do not have banking services. Mobile money helps people get the services they need. (2018) and Suri and Jack (2016) found that mobile money has been an important tool in reaching financial services to the unbanked and poor segments mostly in developing economies where there is limited access to traditional banks.

This data also points towards findings by Aker and Mbiti (2019), where it was established that demographic factors such as age, education, and income are drivers of mobile money adoption. The dominance of the young population in this study, coupled with high daily use frequencies is consistent with findings where youths are more flexible toward digital technologies.

In some areas the results are similar to what we see in Sub-Saharan Africa. This is where mobile money has really changed things for people who did not have access to banks before. The GSMA said in 2022 that Sub-Saharan Africa has than half a billion mobile money accounts, which is the most in the world. If we look at Kenya, Ghana and Tanzania we can see that mobile wallets are very important, for people who do not have bank accounts. This is because mobile wallets are easy to use and not too expensive as seen in the work of Mbiti and Weil in 2016. Mobile money is really helping people in these places. Mobile money accounts are making a difference. Boateng et al., 2020). This is replicated at the regional level in Zambia, where such growth in mobile money usage was reported by the Bank of Zambia (2023) and Mwansa and Nyirenda (2021), particularly in rural and peri-urban areas.

The results also reinforce the observations made by Ngoma and Chirwa (2022) of how the unbanked in Zambia adopt mobile money because it is easy to use, requires minimal documentation, and is accessible through an extensive agent network. The latter aspect has provided groups such as youths and women, who are normally excluded from the formal banking system, an avenue to actively participate in financial activities and, therefore, improve inclusion outcomes.

Interestingly, the study also reflects the coexistence of bank and mobile money usage. According to Chikumba and Musonda (2021), some users keep both bank and mobile money accounts and switch between them depending on the type and convenience of a particular transaction. This dual usage demonstrates that in those contexts where mobile money complements the bank, it does not replace the latter. It also corroborates Jack and Suri's (2016) argument that mobile money and traditional banking systems coexist, serving different user needs.

However, the findings of this study also agree with Chiu et al. (2018) in warning that while mobile money increases access, its use tends to be confined to low-level transactions like P2P transfer and topping up airtime credit, rather than the facilitation of complex financial services. This pattern was also observed in this present research, indicating that even though mobile money penetration is high, it is yet to reach its complete financial potential.

4.4.3 The Impact of Mobile Money on Transaction Revenue Streams in Commercial Banking

The study aimed to establish how mobile money has impacted banks' revenue generated through transactions, based on customers' usage of both mobile and banking platforms to execute core activities: sending and receiving money, saving money, bill payment, depositing, withdrawal, and access to loans. What the descriptive and regression analyses indicate is consistent; mobile money has emerged as the leading channel for most routine financial transactions, with this shift reshaping bank revenue streams.

From the behavioral data, an overwhelming majority of the respondents reported their main reliance on mobile money in pursuit of daily financial activities. About 83 percent used it for sending money, 75 percent to receive funds, and 72 percent to pay bills. Similar patterns emerge for deposits-78 percent and withdrawals-72 percent-with slightly lower but still significant proportions for savings-50 percent and loans-52 percent. Such use indicates a noticeable substitution effect whereby transactions that would normally occur within the banking system are now taking place through mobile channels.

The idea that people who use money are different is supported by the numbers. The Ordered Logistic model is a way to look at this because it works well with the kind of data we have. The results of this model are pretty strong. We can see that people who

only use money to send money are less likely to go to the bank a lot. The same is true, for people who use both money and something else to send money. They are also less likely to make a lot of bank transactions. The mobile money users, people who send money via mobile money are less likely to go to the bank often. People who use both mobile money and another way to send money these people who send money via both platforms are also less likely to make a lot of bank transactions. This hints at the fact that as customers transfer funds via mobile channels, banks lose certain revenue due to traditional transfer fees. A similar pattern can be seen in savings, where exclusive mobile savers ($\beta = -4.66$, $p = 0.009$) are far less involved in banking transactions, a proxy for reduced fee-based income from savings operations.

When people take out money from both bank systems and mobile agents it shows that the bank system is used less. The numbers are clear: β is -4.23. P is 0.017. This means that when customers switch between bank and mobile agents the bank handles withdrawals. As a result the bank earns money from withdrawal charges.

On the hand people still use banks to pay bills and borrow money. The numbers for these activities are $\beta = -1.30$. $P = 0.287$ for bill payments and $\beta = 0.41$ and $p = 0.758$, for borrowing. These numbers tell us that mobile money has not replaced banks for these things yet. Mobile money and bank services are still used together for bill payments and borrowing activities. Surprisingly, those using both bank and mobile platforms daily ($\beta = 2.45$, $p = 0.004$) are associated with higher frequencies of bank transactions, which indicates that there is complementarity, especially for highly active users of financial services who use both systems.

These findings are similar to what we see happening around the world and in regions. We are talking about financial innovations and how they are changing the way traditional banks make money. People have noticed that mobile money platforms make it cheaper for people to move their money around. This is also attracting customers away from the bank channels that charge fees. The World Bank did some studies in 2020. Gomber and others did some studies in 2017. They found the thing, in several countries, including Kenya, Ghana and Uganda. Ngugi et al., 2014; Boateng et al., 2020-shows the sharp declines in revenues from bank-based transfers and payments attendant to the rise of M-Pesa and MTN Money. The Zambian results are consistent with this regional trend: as mobile money increasingly substitutes for banks in routine transactions, banks maintain their dominance in long-term products such as savings and loans.

On the side people in Zambia do things in a way that is similar to what Mwansa and Nyirenda found in 2021 and also what Chikumba and Musonda found in 2021. It seems that Zambians really like to use money for ordinary things like buying everyday items and paying bills adding airtime to their phones and sending money to others. At the time Zambians mainly use banks for saving money formally and getting credit. The mobile money sector in Zambia is getting bigger and bigger. This is clear from the fact that the Bank of Zambia reported that the number of mobile transactions kept growing in 2022. Mobile money, in Zambia is still. This growth is very steady which is what the Bank of Zambia said happened in 2022. The study shows that mobile money is really affecting the money that banks make from transactions. Mobile money is taking away some of the business that banks used to have especially when it comes to sending and saving money. Even though some people still use both money and banks banks are losing money from the small transactions that they used to charge fees for. Mobile money is taking over the transactions that banks used to rely on for income. This is a deal, for banks because these small transactions used to be a big part of how they made money. As such, commercial banks need to start innovating by integrating mobile channels, partnering with fintech firms, or developing hybrid products in order to remain relevant in the increasingly digital financial ecosystem.

5. Conclusion and Recommendations

5.1 Conclusion

The study looked at how mobile money services affect the way commercial banks work in Zambia. It checked things like how many transactions happen, if more people have access to services and how it affects the money banks make. What they found out is that mobile money has really changed the situation in Zambia. It has made things easier for people more people can use services and it has helped include more people in the financial system. Big companies like MTN Money and Airtel Money now offer services. These services include paying bills, paying merchants buying airtime paying school fees and saving money. Mobile money services, like MTN Money and Airtel Money have made a difference. The service providers have really. This has helped people get what they need financially without having to go to traditional banks all the time. This means the service providers have made it possible for people to do financial things. The expansion, by the service providers has helped people fulfill their needs in many ways.

The study also discovered that mobile money has helped to increase the number of transactions in the economy. This is a thing for the economy as a whole. However, it has had effects on the banking sector.

Mobile money has increased the number of transactions but commercial banks have seen fewer customers coming to them directly. This is because many people prefer to use wallets for small and frequent transactions.

Mobile money seems to be helping the economy in general. It is also competing with banks when it comes to individual transactions. Mobile money is good for the economy. It is bad for the banks, in some ways.

On inclusion the study found out that mobile money is really good at helping to close the gap between people who have bank accounts and those who do not. This is especially helpful for women, young people and people who live in areas. These people were previously left out because they could not afford it lived far away or did not have the right documents. Mobile money is easy to use and accessible. It has encouraged more people to participate in the financial system. This is a contribution to the goals of financial inclusion. Mobile money is making a difference, in financial inclusion.

The study found out that mobile money is changing the way commercial banks make money from transactions. When people use their phones to send money pay bills and send remittances the banks get less money from fees. This is a problem for the banks. It also gives them a chance to come up with new ideas like working with other companies making better digital banking solutions

and offering extra services that work with mobile money platforms. Mobile money is really changing things, for banks and they need to adapt to these changes to keep making money from mobile money services and other things.

The study shows that mobile money is changing the way banks in Zambia work. Mobile money is helping more people get access to services. At the time it is also causing problems for traditional bank business models. This means that commercial banks in Zambia need to make changes if they want to stay important in a financial world that is becoming more digital. Mobile money is making commercial banks in Zambia think about how they do things. Commercial banks, in Zambia have to adapt to money to stay relevant.

5.2 Recommendations

So what did we learn from this study? The study had some findings and we can draw some conclusions from it. Here are some recommendations that we think are an idea based on what the study told us:

i. Strategic Collaboration between Banks and Mobile Money Operators: Commercial banks need to work with mobile money providers like MTN and Airtel. Commercial banks and mobile money providers like MTN and Airtel can work together to make products. They can also make a shared payment platform and co-branded services. This way commercial banks and mobile money providers like MTN and Airtel will both not compete with each other too much.Commercial banks and mobile money providers, like MTN and Airtel will see that they are both getting something out of this partnership.
ii. Innovation in Digital Banking Services: Banks need to make their digital banking better. They should offer services that're easy to use and do not cost a lot of money. This way digital banking can be as convenient as money. Banks can do this by making applications and digital accounts that people can open right away. They can also make it easy for people to pay bills online. If banks do these things they will be able to keep the customers they already have and get ones too. Digital banking is very important these days. Banks have to make sure their digital banking is good so they can stay competitive. Digital banking services, like mobile applications and online payment solutions will help banks attract and retain customers.
iii. Regulatory support and control: The Bank of Zambia and ZICTA are very important. They should always be working on making policies that help the Bank of Zambia and ZICTA make it easier for banks and mobile money operators to work together. This is good, for people who use these services. When banks and mobile money operators work well together it is easy to move money. This helps make sure that all parts of the system are working well together. The Bank of Zambia and ZICTA should keep doing this to help people and make the financial system better.
iv. Financial Literacy and Consumer Awareness: There is a need to enhance the campaigns on financial literacy both in rural and urban areas. Educating the people on how to use mobile money in addition to traditional banking services will enable them to use their finances responsibly and get full benefit from digital financial inclusion.
v. Diversification of Bank Revenue Streams: Alternative sources of income for commercial banks could come from digital loans, investment products, and service-based digital platforms to set off deflationary transaction fee revenues. Emphasizing value-added financial services and technology-driven solutions will improve banks' long-term profitability.
vi. Research and Data-driven Policy Development: We need to do research using real life data to see how mobile money affects banks in the long run. This includes looking at how it changes the way people save money and get loans. If we have this information people who make decisions and banks can make choices to help the financial system grow in a healthy way. Mobile money is changing the way banks work. It is also creating new opportunities for people to work together and come up with new ideas. This can help more people get access to banking services and make the system better for everyone. Mobile money is really important because it helps people save and get access, to credit which is a part of having a strong financial system. The future of Zambia's financial sector thus lies in the integration of banking and mobile platforms, facilitated by effective regulation, technological advancement, and consumer empowerment.

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