



EFFECT OF MOBILE FINANCIAL SERVICES ON FINANCIAL INCLUSION AMONG WOMEN IN ZAMBIA: THE CASE OF MTN MOBILE FINANCIAL SERVICES.

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Abstract

One of the challenges in many economies is financial inclusion, in which rural areas and women have limited capacity to access and obtain financial services. One of the key drivers through which financial inclusion agenda is driven, is by Mobile money, which has grown rapidly over the past decade. MTN Zambia is one of the mobile money service providers in the country. Therefore, this study assessed the effect of MTN mobile money services on improving financial inclusion amongst women in the country. The main objective of the study was to establish the effect of MTN mobile money services on improving the availability and access to financial services and products, and reducing the cost of obtaining financial services and products. A survey was conducted involving women in three districts; Kafue, Chilanga and Chongwe. The study used systematic random sampling to select 180 women. Data analysis was done through obtaining descriptive statistics; e.g. the mean, frequencies and percentages, as well as employing chi-square test of association and logistic regression analysis. The Pearson chi-square results indicated a positive association between MTN credit loans and improved access to FSP, statistically significant at 0.0001 P-value. By using logistic regression analysis, the study found that accessing MTN loans has a significant

positive effect on improving financial access. The Chi-square test of association indicated that MTN money withdraw cost, charges on MTN bill payments and MTN interest on loans were found to have positive effects on reducing the cost of obtaining Financial Services and Products, statistically significant at 0.0001 p-value. The logistic regression analysis also found that MTN mobile money services has a significant positive effect on reducing the cost of obtaining financial services and products. The study therefore recommended that MTN Zambia and other mobile money providers should increase the amount of loans given to women; and should consider reducing the interest on loans for women, especially repeat borrowers who pay back within short periods of time (less than 30 days).

Key Words: Mobile Financial Services, Financial Inclusion, Women, Access, costs, availability, Financial Services and Products.

1.0 Introduction

Financial Inclusion defined as a process of delivering banking services and products at an affordable cost, to the large sections of disadvantaged and low-income groups (Reserve Bank of India, 2011) is an important indicator of national development. This is because increasing access to financial services is critical to improving the quality of life of citizens, and also to provide significant growth opportunity for financial institutions (PwC Zambia, 2018). The concept of financial inclusion has four main components namely: financial availability, accessibility, affordability, as well as financial literacy.

According to the World Bank's definition, "Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs transactions, payments, savings, credit and insurance delivered in a responsible and sustainable way." Meaning, access to a transaction account (like those provided by Digital Financial Services) is a first step towards broader financial inclusion, since it allows people to store money and send and receive payments. Financial inclusion thus entails a level of formality.

Zambia has set financial inclusion as one of the main priorities by involving all stakeholders in the financial sector, and one of the key drivers through which financial inclusion agenda is being driven is the Mobile money, which has since grown rapidly over the past decade. This has been made possible with the increased demand for financial services, coupled with a rapid growth in the communication sector where communication service providers are now adding financial services in their portfolios. But what is the agenda for women in financial inclusion?

According to FSD Zambia, from a total population of Zambia of 17.9 million, with an adult population of 9.5 million it was found that Financial inclusion increased by 10.1 percentage points to 69.4% from 59.3% in 2015; based on this 71.2% of males are financially included compared to 67.9% of females). Furthermore, formal financial inclusion also rose to 61.3% (2015, 38.2%). This growth was mainly attributed to increased uptake of mobile money services to 58.5% from 14.0% in 2015 (Finscope Survey report, 2020).

However, despite the tremendous progress made in achieving financial inclusion in Zambia, a larger proportion of the adult population are financially excluded, and do not use financial products and services from regulated providers (Zambia National Financial Sector Development Policy, 2017). Africa in general, and Zambia in specific, has been characterised by financial exclusion and less economic development. For the exception of South Africa, there is a Limited range of financial products offered in African countries. This financial exclusion is mainly due to high bank charges and low confidence in financial institutions, which results in low savings (FitzGerald, 2006). The National Financial Inclusion Strategy for the year 2017-2022 reveals that as of the year 2015, more than 3.5 million Zambian adults, translating to 41% of the adult population were still financially excluded while 5 million, translating to 60% of the adult population do not use financial products and services from regulated providers.

In Zambia, there are various DFS providers. Celpay being the first payment service provider, in 2002, its operational licence was deactivated in 2013. Zoono, a mobile money provider then came onto the market in 2009. Zoono made use of the Airtel network for sending and receiving data, though an independent company relied solely on transactions for its profits. Zoono is not a mobile money provider, but rather a money transfer service which introduced mobile wallets (e-wallets). Airtel and MTN are the mobile network operators that began offering mobile money services (transfers, bill payment and savings) in 2011 and 2012, respectively. Deposits have to be made at the relevant agencies to use Airtel Money. It also allows for bulk payments such as salaries to employees and casual labourers. The loans are provided by MTN, and provides loans to consumers and small businesses without the requirement for any savings or collateral.

1.2 Statement of the Problem

MTN introduced the mobile money services in the market in the year 2011 (MTN Annual Report, 2011.) The purpose was to take advantage of the existing market gaps in the financial sector, as well as improve community access to financial services in the country.

However, the Bank of Zambia Annual Reports have been over a period of time, identifying structural challenges which have ultimately limited the effectiveness of monetary policy. One such major challenge is the limited financial inclusion in which rural areas and women have limited capacity to access and obtain financial services (BOZ Annual Report, 2017; GRZ, Ministry of Finance, 2017).

Further, this lack of access to financial services by various vulnerable group is reflected in many other literature sources, such as the 2018 Global Digital Banking Consumer Survey as well as the National Financial Inclusion Strategy for the year 2017-2022. It is at this backdrop that the study evaluated the extent to which the entering of MTN into the financial market has helped improving financial inclusion, amongst women, in the country.

1.3 Objectives

1.3.1 Main objective

To examine the Impact of MTN Mobile Financial Services on financial inclusion among women in Zambia.

1.3.2 Specific objectives

1. To establish the effect of MTN mobile money services on improving the *availability* of financial services and products among women in Zambia.
2. To determine whether the presence of MTN mobile money services has improved *access* to financial services and products among the women in Zambia.
3. To determine whether the presence of MTN mobile money services has reduced the *cost* of obtaining financial services and products among the women in Zambia.

2. LITERATURE REVIEW

Over the past several years, there has been increased global interest in financial inclusion and its impact on poverty alleviation (Government of Zambia 2017). As a result, financial inclusion rates have increased around the world, including in Zambia. However, not much progress has been made in reducing the financial inclusion gender gap. The introduction of new innovative technologies, such as Mobile Money (MM) has the potential to reduce some of the barriers that contribute to the exclusion of women from the formal financial system, particularly affordability and availability, and thereby increase financial inclusion (Leora et al., 2015).

2.1 Financial Inclusion

According to the World Bank, financial inclusion is the process of individuals and businesses having access to and using a variety of affordable and convenient financial products and services (World Bank, 2018). These financial products and services can either be formal, provided by a formal financial institution which are regulated and adhere to legal rules, or informal, not regulated by legal rules (UNCDF, 2016). Financially excluded groups are unable to benefit from the formal financial sector, and therefore lack the capacity to manage their finances. Lack of access to formal financial services, including borrowing, saving, and transferring money, increases the individual's vulnerability to negative economic shocks and subjects them to poverty (Kabala and Seshamani 2016a; Donovan, 2011). The top three reasons globally that consumers cite for financial exclusion is lack of money, the cost, and that financial institutions are too far away (Leora et al., 2015). Additionally, rural areas tend to have higher levels of financial exclusion in comparison to urban areas. This can be explained by several reasons. Firstly, providing formal financial services to rural populations is pricier for service providers than providing the same service to urban areas (distance, lack of existing infrastructure, etc.), which are typically wealthier. Secondly, service providers are less incentivized because serving poorer communities generates lower revenues (Kabala and Seshamani, 2016b). In order to mitigate risks to economic shocks, the poor turn to informal financial services; however, access to only informal financial services limit their capacity to manage their financial responsibilities (Donovan, 2011).

2.2 Financial Inclusion Policy

Globally, financial inclusion has become a critical objective for policymakers (Government of Zambia, 2017). In 2010, the Global Partnership for Financial Inclusion was formed by the G-20 and developed the Principles for Innovative Financial Inclusion to help foster a regulatory environment that enables innovative financial inclusion (University of Toronto 2010). Additionally, in 2011, the Maya Declaration, which is an initiative to increase financial inclusion, was developed by the Alliance for Financial Inclusion, an international network of regulators (Alliance for Financial Inclusion n.d.). Moreover, in 2013, the World Bank launched Universal Financial Access by 2020, with the goal of enabling one billion people to gain access to a financial account. As part of the World Bank initiative, the Government of Zambia launched the National Financial Inclusion Strategy (NFIS) in November 2017. The goal is to achieve universal access and usage of a broad range of quality and affordable financial products and services (Government of Zambia, 2017).

2.2 Mobile Money

The NFIS cites MM as one of the key delivery channels for financial products and services in Zambia. MM is comparable to mobile banking, however rather than providing full access to banking services, users can deposit, withdraw, send or receive money through an agent rather than through a bank account (Dzokoto, Appiah, and Chitwood 2016). MM technology applications are usually either available via mobile network, or a software which is programmed on a SIM card. Users can convert cash into digital money by going to an agent's outlet, the agent changes the cash into digital money and then transfers the funds to the user or recipient via SMS (Peša 2018). Users can convert the digital money back into cash by visiting an agent, who makes the conversion and provides the recipient with cash (Donovan, 2011).

Digital financial tools, such as MM, are viewed as a mechanism that can contribute to increasing financial inclusion and reducing poverty by providing excluded groups access to formal financial services. Over the past decade, the introduction of MM has resulted in mixed outcomes in various developing countries. Since 2011 there has been a global increase in financial account ownership. This growth was mostly in financial institutions, with the exception of Sub-Saharan Africa where MM increased account penetration from 24 percent to 34 percent (Leora et al., 2015). By the end of 2015, MM was in 93 countries and there were over 270 MM services offered. Globally, 32 million transactions are processed via MM on an average day (Suri, 2017). Although Zambia was

among the first African countries to introduce DFS in 2002, the utilization of this service has not been as successful as in other countries, such as Kenya. M-PESA, which is a MM product launched in Kenya, is said to have “increased per capita consumption levels and lifted 194,000 households, or two percent of Kenyan households, out of poverty” (Suri and Jack 2016, p. 1288). This is the most successful example of a MM product globally.

More and more Zambians are signing up for MM in comparison to banks. There are several factors that influence the adoption of MM in Zambia, including the fact that minimal sign-up documents are required to open up an MM account and the growing number of people with access to mobile phones (Kabala and Seshamani, 2016a). As of March 2016, the number of accounts registered for MM exceeded the number of accounts registered with a bank, 5.92 million and 2.90 million respectively. However, only a small fraction of these accounts, 250,000, were actively being used (Government of Zambia 2017).

In the past five years the number of Zambians with access to mobile phones has rapidly increased; approximately 77 percent of the population has access to mobile phones (Peša, 2018). Additionally, according to a 2015 FinScope study of Zambian adults, approximately 86 percent are willing to learn a new technology and 47 percent dislike carrying cash (InterMedia, 2016a), this suggests that there is willingness and capacity amongst consumers to try a new technology such as MM. Consumer preferences in Zambia are gradually moving from cash to digital, however, the shift has been slow to reach its full potential (Dzokoto, Appiah, and Chitwood 2016).

2.3 Benefits of Mobile Money

For many rural and poor urban communities in Africa, formal financial services, in particular banks, are not accessible. MM gives underserved communities affordable and secure access to formal financial services including savings, credit, bill payment, and money transfers (Peša 2018; Donovan, 2011; Kabala and Seshamani, 2016a). MM agents have been established in rural, peri-urban and informal urban settlements allowing users living in these areas to complete transactions in their local communities (Peša 2018).

A comparative study of 26 banks internationally found that alternative formal financial services were 19 percent more expensive than branchless banking, including MM. The difference in price doubled for smaller transaction amounts and money transfers using informal financial services

(Donovan 2011). A second study found that the cost of sending 100 USD internationally decreased from \$8 USD to \$2 USD because of MM (Heeks and Bukht, 2018). Lower costs are particularly appealing for low income individuals as they have less disposable income. Another benefit of MM is that it is relatively safe compared to cash and other alternatives. As highlighted by Donovan (2011), studies of M-PESA showed that because MM was less visible, there was a decrease in the risk of mugging. The liquidity of MM as well as the speed of transactions are also major benefits to MM. In times of need, the user can easily liquidate their MM holdings rather than selling their livestock, which is significantly less liquid (Donovan, 2011). Moreover, funds can be quickly sent to or received from family or friends in a crisis (Donovan, 2011). A research project in Kenya comparing MM users and non-users who suffered a shock (e.g. loss of job, death in the family, etc.) found that non-users experienced a seven percent decrease in household consumption, while users' consumption was not impacted (Heeks and Bukht, 2018).

2.4 Challenges to Mobile Money Adoption

Although there are many benefits to MM, there are challenges which must be overcome in order to ensure MM reaches its full potential. There is evidence to suggest that there is lack of knowledge about MM in Zambia. The top three reasons that individuals cite for not using MM are related to not knowing about it, how to get it or not seeing a need for the service (InterMedia, 2016a). Additionally, some authors argue that MM may contribute to increasing social inequalities and exploitation of the poor, rather than contributing to financial inclusion of the poor (Murphy et al., 2014 in Peša 2018; Donovan 2011). Donovan (2011) argues that the least likely to benefit from MM are the poorest in society as they have less skills, ability to pay and network coverage. Although MM has reduced the cost of formal financial services, most transactions incur a fee which may act as a barrier for the poor. Additionally, MM requires essential skills, such as numeracy and literacy skills, that the poor might lack (Donovan, 2011). These skills are required to fully use and benefit from MM. Without the proper training on MM products, the poor will have limited access and therefore continue to be excluded from the formal financial sector.

2.5 Gender and Access to Financial Services

Women are more excluded from the formal financial sector compared to men that makes them more susceptible to poverty. Globally, women face social, cultural and political barriers that make

it more difficult for them to open bank accounts relative to men. As of 2014, approximately 59 percent of men reported having a financial account, as opposed to 50 percent of women in developing countries (Leora et al., 2015). Moreover, women make up 55 percent of the unbanked adults in the world (Leora et al., 2015). Tavneet Suri & Jack (2016) argue that poverty reduction is less about having more access to capital than it is about having access to use the formal financial sector to manage financial resources.

Although financial account ownership is continuing to increase globally, the gap between women and men in account ownership has held steady over the past several years at seven percent globally and nine percent in developing economies (Leora et al., 2015). A study by GSMA (2015) has shown that in some countries the increase in account ownership has resulted in a decrease in the gender gap; for example, in India the gender gap decreased from 20 percent to 6 percent, while in other countries it increased. In Ethiopia there was no gender gap in account ownership as of 2014, however since then, there has been a large increase in account ownership, which led to a double-digit gender gap (GSMA, 2015). Thus, increasing access to financial services alone is not enough to reduce the gender gap. Greater understanding into factors that contribute to the gender gap is required to ensure that gender specific barriers to financial inclusion are addressed. Digital financial services (DFS), such as MM, are viewed by many as a tool that can increase the inclusion of women to the formal financial sector and as a way to reduce the gender gap.

3. METHODOLOGY

3.1 Research Design

A research design basically outlines the methods and procedures that a researcher follows or uses in an attempt to achieve the objectives of the study. Kothari (1985) defines research design as a blueprint for the collection, measurement and analysis of data. Different research designs are used by the researchers and each is dependent on the requirements of a given study as determined by the researcher. This particular study was descriptive in nature, as it sought to establish the experiences of women that are based in Chongwe, Kafue and Chilanga, in relation to the coming in of MTN mobile money in the financial market. According to Albaum, Rooster and Smith (2014),

descriptive study design studies often allow a researcher to understand the general environment of his subjects, or respondents, by predicting relationships, results, or events. The study also used causal design to statistically determine the impact of MTN mobile money on financial inclusion. A survey was conducted to capture data both of qualitative and quantitative in nature.

3.2 Population and Sampling Techniques

The target population were all the women that reside in Chongwe, Kafue and Chilanga districts. According to the CSO census for the year 2010, the total population for women was 685,551 (Central Statistics of Zambia, 2010). Based on this population size, a sampling frame was designed. In this study however, Krejcie and Morgan (2013) was used for the determination of the sample size to be used in the study. Based on this formula, a corresponding value for a population of 685,551 was a sample value of 360. However, given the resource challenges of interviewing these many respondents, the study adjusted the sample size by adjusting the error term to 0.1, and sample size to 180 respondents. Two types of sampling techniques were employed in the study. Firstly, in selecting the target Districts from which to interview subjects, a convenient sampling method was used in which target areas were chosen based on the convenience and proximity of the areas to Lusaka District. In selecting the participants to be included in this study, a systematic random sampling was used in which respondents were systematically selected from the compounds.

3.3 Data Collection Methods

This research study used primary data in order to be able to adequately address the research objectives. Devin Kowalczyk (2015) defines primary data as factual, first-hand accounts of study written by a person who was part of the study. For purposes of this study primary data was acquired through the use of questionnaires. The study used questionnaires for data collection, which contained closed ended questions which are easily understood by the respondents and help to save time of interview, and also open-ended questions, hence, the study collected both quantitative and qualitative data.

3.4 Data Analysis

Upon collection of the data from the field, the questionnaires were edited to ensure that the final data to be entered is clean for analysis. Close ended responses were converted to quantitative values while open ended responses were entered qualitatively as they were. Data was entered and analyzed in a statistical tool called Statistical Package for Social Scientists (SPSS version 16). After entering, data was further cleaned before the final analysis. SPSS was preferred for the analysis of this study findings due to its user friendliness, as well as its robustness in performing functions ranging from data entry and cleaning, carrying out descriptive analysis, as well as its ability of carrying both univariate and multivariate analyses, with statistical tests where necessary.

The analysis was done in three phase's namely descriptive analysis, dealing mainly with the frequency distribution of the sample frequencies and percentages. The purpose of descriptive analysis was to describe and illustrate the characteristics of the subjects in the sample. The second phase of analysis was the univariate analysis of each of the variables in the objectives. This further helped to have a basic understanding of respondents' opinion about the MTN mobile financial services and its inclusiveness. Finally, the bivariate analysis was conducted, which involved the comparisons between dependent and independent variables. This was done to basically determine how the introduction of MTN mobile money has influenced financial inclusion, represented by availability, accessibility, financial literacy, as well as cost of obtaining financial services and products among the women in Zambia. To achieve this therefore, logistic regression and chi-square test of dependence were used to determine relationships, as well as the statistical significance of this relationship, between MTN mobile money services on one hand, and the aspects of financial inclusion on the other.

4. RESULTS

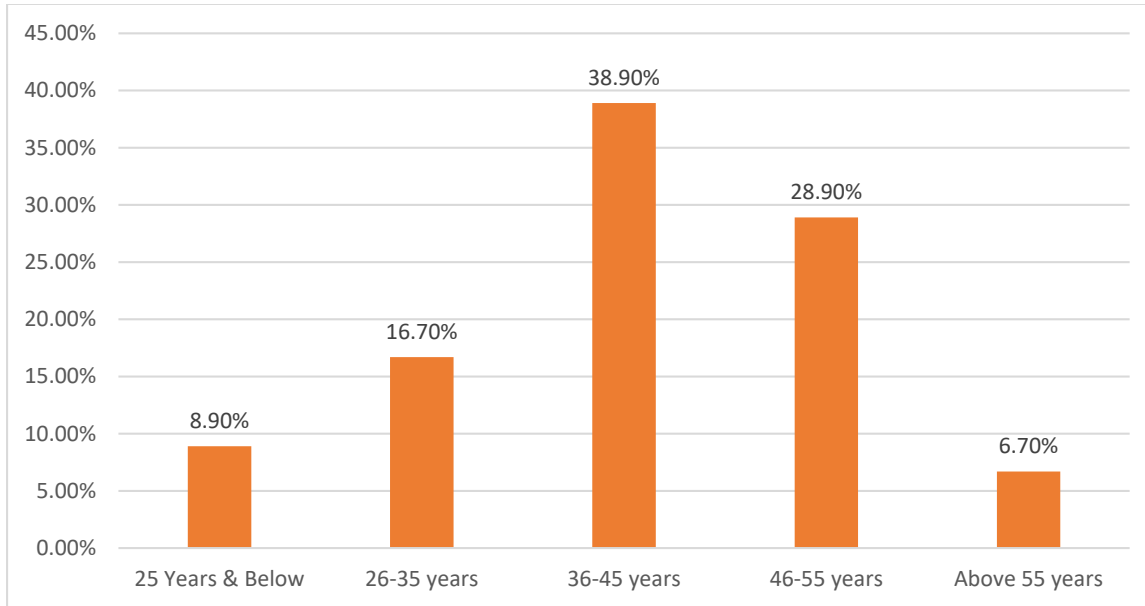


Figure 1.1 Age Distribution of the Respondents

From the results in figure 4.1, the study found that 8.9% of the respondents were aged 25 years and below, 16.7% of the respondents were aged 26-35 years, 38.9% of the respondents were aged 36-45 years, 28.9% of the respondents were aged 46-55 years, and 6.7% of the respondents were aged above 55 years. From these results, majority of the respondents were aged 36 years and above.

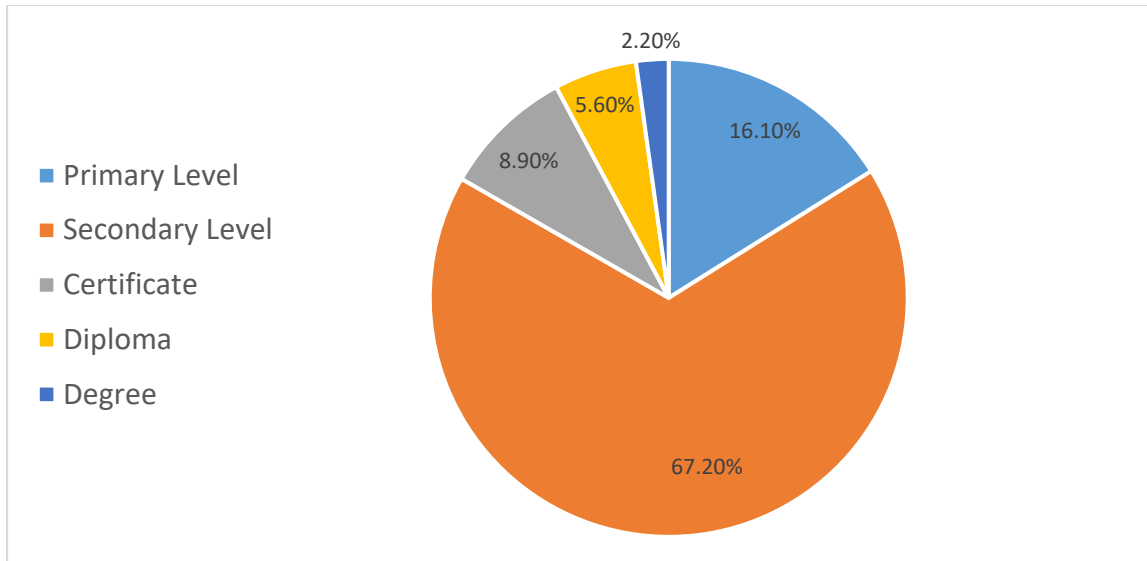


Figure 4.2 Education Levels of the Respondents

The results in the figure above shows that 16.1% of the respondents have only attained primary level of education, 67.2% of the respondents had attained secondary level of education, 8.9% of the respondents had attained tertiary certificate level of education, 5.6% of the respondents had attained diploma level of education, and only 2.2% of the respondents had attained degree level of education. Majority of the respondents had not attended college level of education, only secondary and primary levels of education.

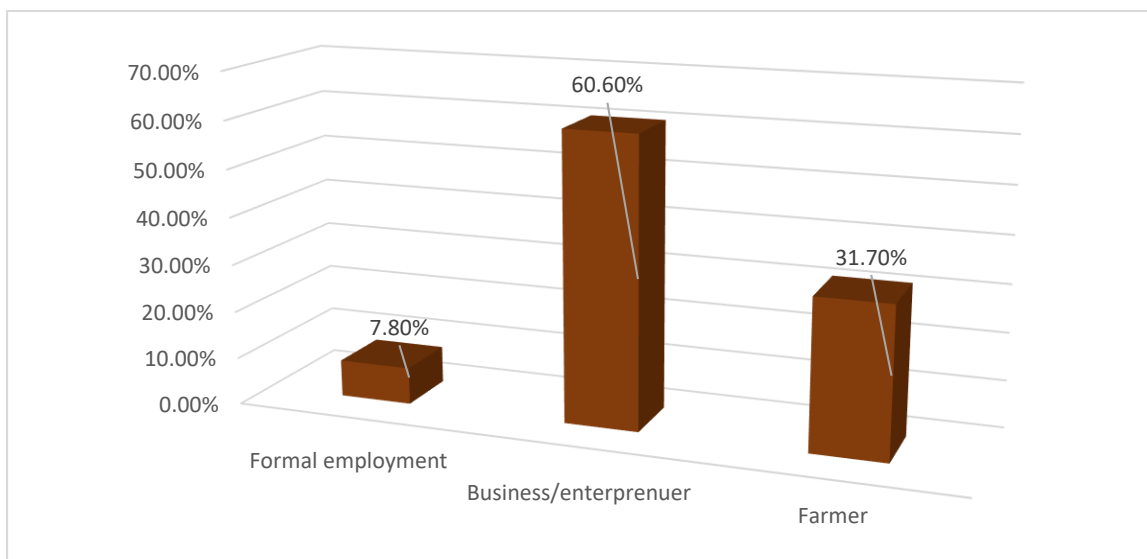


Figure 4.3 Occupations of the Respondents

Concerning the occupations of the respondents, the study found that only 7.8% of the respondents were in formal employment, 60.6% of the respondents were entrepreneurs doing businesses, and

31.7% of the respondents indicated farming. Majority of the respondents were doing business, making financial inclusion so important in contributing to the development of the businesses through access to finances for capital.

Table 4.1 Availability and Access to MTN Vendor Services

Variable	Frequency	Percent
Sufficient MTN Vendor Services	169	93.9
Vendors in less than 30 minutes' walkable distance	151	83.9
Vendors in at least 1 hour walkable distance	29	16.1

The results in the table above shows that 93.9% of the respondents reported having sufficient MTN vendors for mobile money services. 83.9% of the respondents indicated that they have access to the vendors in less than 30 minutes walkable distance, 16.1% of the respondents indicated that they can find MTN vendors in at least 1 hour walkable distance.

Table 1.2 Improved Access to Financial Services and Products

Response	Frequency	Percent	Cumulative Percent
Strongly Agree	48	26.67%	26.67%
Agree	72	40.0%	66.67%
Moderately Agree	23	12.77%	79.44%
Disagree	28	15.56%	95.0%
Strongly Disagree	9	5.0%	100%
Total	180	100%	

Respondents were asked if they have seen an improvement in access to financial services and products. 26.67% of the respondents strongly agreed that they have seen an improvement in access to financial services and products, 40.0% of the respondents also agreed to the statement, 12.77% of the respondents only moderately agreed to the statement. 15.56% of the respondents disagreed to the statement, and 5.0% of the respondents strongly disagreed that there's improved access to financial services and products. Majority (79.44%) of the respondents agreed that they have seen an improvement in access to financial services and products.

Table 4.3 Respondents Access to MTN Mobile Financial Services

MTN Financial Services	Frequency	Percent
MTN Money Savings	150	83.33%
MTN Credit Loans	142	78.89%
MTN Bill Payments	147	81.67%
Borrowing airtime loans on MTN	134	74.44

Respondents were asked if they have access to MTN mobile money services. 83.33% indicated access to MTN money saving, 78.89% of the respondents indicated access to MTN credit loans, 81.67% of the respondents indicated access to MTN bill payments, and 74.44% of the respondents indicated access to borrowing airtime loans on MTN. These results clearly shows that majority of people have access to MTN mobile financial services. This shows that MTN significantly contributes to ensuring financial inclusion through availability and access to financial services.

Table 4.4 Frequency of Access to MTN mobile money loans

Variable	Obs	Mean	Std. Dev.	Minimum	Maximum
Number of Accessing MTN loan	142	2.9718	1.7008	1	10

The study asked respondents the number of times they have accessed MTN mobile money loans. The minimum number of times of accessing mobile money loans was 1, maximum of 10 times, means of 3 times (2.9718) and a standard deviation of 1.7008. The results shows that majority of the respondents have accessed MTN mobile money loans over 1 time, but 2 to 5 times. This shows that MTN mobile money has significant contribution to financial access and improving financial inclusion for all.

Table 4.5 Adequacy of the Amount of Loan from MTN, Obtained Last Time.

Adequacy of the Loan	Freq.	Percent	Cum.
very adequate	6	4.23	4.23
adequate	72	50.7	54.93
fairly adequate	37	26.06	80.99
inadequate	20	14.08	95.07
very inadequate	7	4.93	100

Total	142	100
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Respondents were asked the adequacy of the loan they obtained last time from MTN mobile money. From the total number (142) of respondents with access to MTN mobile loans, 4.23% of the respondents indicated that the loan obtained was very adequate, 50.7% indicated the loan obtained to be adequate, 26.06% indicated the loan to be fairly adequate, 14.08% indicated the loan obtained to be inadequate, and 4.93% indicated the loan obtained to be very inadequate. Based on these results, majority (80.99%) of the respondents who got loans from MTN mobile money services reported the loan obtained last time to be adequate. This shows that MTN mobile money services makes significant contribution to financial availability and ensures financial inclusion.

Table 4.6 Chi-square test of association between MTN mobile financial services and Improvement in Access to Finances and Products.

	Improved Access to FSP			
	no	yes	total	
MTN Money Savings	yes	14	136	150
	no	23	7	30
	Total	37	143	180
	no	yes	total	Pearson chi2(1) = 69.4077 Pr = 0.0001 Cramér's V = 0.6210 Fisher's exact = 0.0001
MTN Credit Loans	yes	11	131	142
	no	26	12	38
	Total	37	143	180
	no	yes	total	Pearson chi2(1) = 67.5803 Pr = 0.0001 Cramér's V = 0.6127 Fisher's exact = 0.0001
MTN Bill Payments	yes	12	135	147
	no	25	8	33
	Total	37	143	180
	no	yes	total	Pearson chi2(1) = 75.4026 Pr = 0.0001 Cramér's V = 0.6472 Fisher's exact = 0.0001
Borrowing airtime loans on MTN	yes	13	121	134
	no	24	22	46
	Total	37	143	180
	no	yes	total	Pearson chi2(1) = 37.8278 Pr = 0.0001 Cramér's V = 0.4584 Fisher's exact = 0.0001

The study conducted a Chi-square test of association to determine whether there's an association between observed improved access to Financial Services and Products (FSP) and MTN money savings. The study obtained a chi-square value of 69.4077 and a p value of 0.0001, with Fisher's exact P-value of 0.0001, and Cramer's V of 0.6210, indicating that MTN mobile money savings

has a positive effect on improving access to Financial Services and Products. Pearson chi-square value of 67.5803 was obtained between MTN credit loans and improved access to FSP, with a Cramer’s V of 0.6127, indicating a positive association, and the results were statistically significant at 0.0001 P-value. Pearson chi-square value of 75.4026 was obtained with Cramer’s V of 0.6472, statistically significant at 0.0001 p-value, indicating that MTN bill payment system has a positive effect on improving access to Financial Services and Products (FSP). Pearson Chi-square value of 37.8278 was obtained with Cramer’s V of 0.4584, indicating that borrowing airtime on MTN has a positive effect on improving Financial Services and Products, statistically significant at 0.0001 p-value. These results indicate that using MTN mobile money services has significant positive contribution to improving access to Financial Services and Products.

4.4 Reduction in the Cost of Obtaining Financial Services and Products

Table 4.7 Affordability of MTN mobile money services

MTN Mobile Financial Services	Affordable	High
MTN money withdraw cost	109 (60.56%)	71 (39.44%)
Charges on MTN Bill Payments	134 (74.44%)	46 (25.56%)
MTN Interest on loans	110 (61.11%)	70 (38.89%)

Respondents were asked to rate whether the cost of MTN mobile money services is affordable or high. 60.56% of the respondents indicated that MTN money withdraw cost is affordable, while 39.44% indicated the cost to be high. 74.44% of the respondents indicated the charges on MTN bill payments to be affordable, while 25.56% indicated the cost to be high. 61.11% of the respondents indicated the interest on MTN loans to be affordable, while 38.89% indicate the cost to be high. From the results above, majority of the respondents indicated the costs over MTN mobile services to be affordable.

Table 4.8 There’s reduced cost of obtaining financial services and products

Response	Freq.	Percent	Cum.
strongly agree	12	6.67	6.67
agree	65	36.11	42.78

moderately agree	30	16.67	59.44
disagree	60	33.33	92.78
strongly disagree	13	7.22	100
Total	180	100	

Respondents were asked if there's reduced cost of obtaining financial services and products. 6.67% of the respondents strongly agreed, 36.11% of the respondents' agreed, and 16.67% of the respondents moderately agreed that there's reduced cost of obtaining financial services and products. On the other hand, 33.33% of the respondents disagreed, and 7.22% of the respondents strongly disagreed that there's reduced cost of obtaining financial services and products. A slight higher number of respondents agreed that there's reduced cost of obtaining financial services and products.

Table 4.9 Chi-square test of association between MTN Cost of Financial Services and Reduced Cost of Obtaining Financial Services and Products.

	Reduced Cost of Obtaining FSP				
	no	yes	total		
MTN money withdraw cost	no	66	5	71	Pearson chi2(1) = 133.5493 Pr = 0.0001 Cramér's V = 0.8614 Fisher's exact = 0.0001
	yes	7	102	109	
	Total	73	107	180	
Charges on MTN bill payments	no	41	5	46	Pearson chi2(1) = 60.4766 Pr = 0.0001 Cramér's V = 0.5796 Fisher's exact = 0.0001
	yes	32	102	134	
	Total	73	107	180	
MTN interest on loans	no	64	6	70	Pearson chi2(1) = 122.9677 Pr = 0.0001 Cramér's V = 0.8265 Fisher's exact = 0.0001
	yes	9	101	110	
	Total	73	107	180	

Chi-square test of association was conducted to determine if the cost of MTN mobile money services has an effect on reduced cost of obtaining financial services and products. A chi-square value of 133.5493 was obtained, with Cramer's V of 0.8614, indicating that MTN money withdraw cost has significant effect on reducing the cost of obtaining Financial Services and Products, statistically significant at 0.0001 p-value. A chi-square value of 60.4766 was obtained, with a Cramer's V of 0.5796; indicating that charges on MTN bill payments has significant effect on reducing the cost of obtaining Financial Services and Products, significant at 0.0001 p-value. MTN

interest on loans was found to have a positive effect on reducing the cost of obtaining Financial Services and Products, statistically significant at 0.0001 p-value, chi-square value of 122.9677, and Cramer’s V of 0.8265. These results indicates that the cost of MTN financial services has significant effect on reducing the costs of obtaining financial services and products.

Table 4.10 Logistic regression analysis on the effect of MTN loan access on improving financial access

Number of obs = 180						
			LR chi2(1)	=	47.69	
			Prob > chi2	=	0.0000	
Log pseudolikelihood = -62.398629			Pseudo R2	=	0.3176	
Improved_Financial_Access	Odds Ratio.	Robust Std. Err.	z	P>z	[95% Conf. Interval]	
MTN_Loan_Access	25.80303	12.14576	6.91	0.000	10.25655	64.91429
_cons	0.4615385	0.1615222	-2.21	0.027	0.232444	0.916428

The study carried out logistic regression analysis to determine if access to MTN loans has a significant effect on improving financial access. The study found that accessing MTN loans has significant positive effect on improving financial access, and the results were statistically significant at 0.0001 p-value, with odds ratio of 25.80303. Women who access MTN money loans highly indicate improved financial access. This means that access to MTN loans has significant positive effect on ensuring financial inclusion among women.

Table 4.2 Logistic regression analysis on the effect of the costs of MTN financial services on the cost of obtaining financial services and products.

Number of obs		=	180
Wald chi2(1)		=	17.83
Prob > chi2		=	0.0000

Log likelihood = -107.36426				Pseudo R2		= 0.1166	
Reduced Cost of obtaining FSP		Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Cost of MTN MoMo Services		14.9543	9.5788	4.22	0.000	4.2612	52.4799
_cons		0.1364	0.0842	-3.23	0.001	0.0407	0.4571

The study performed logistic regression analysis to determine the effect of the cost of MTN mobile money services on the cost of obtaining financial services and products. The study found that MTN mobile money services has a significant positive effect on reducing the cost of obtaining financial services and products, with 14.9543 odds, and statistically significant at 0.0001 p-value. This means that MTN mobile money services has significant effect on ensuring financial inclusion among women through reduced cost of obtaining financial services.

5. DISCUSSION OF THE FINDINGS

The National Financial Inclusion Strategy for the year 2017-2022 reveals that as of the year 2015, more than 3.5 million Zambian adults, translating to 41% of the adult population were still financially excluded while 5 million, translating to 60% of the adult population do not use financial products and services from regulated providers. Fortunately, Zambia has seen development from the telecommunications sector introducing mobile money services. This study therefore sought to assess the impact of mobile financial services on financial inclusion among women in Zambia.

The effect of MTN in improving the availability of financial services and products among women.

The study found that 93.9% of the respondents reported having sufficient MTN vendors for mobile money services. 83.9% of the respondents indicated that they have access to the vendors in less than 30 minutes walkable distance. With regard to the frequency of accessing mobile money loans; the results shows that majority of the respondents have accessed MTN mobile money loans more than once, but 2 to 5 times. Majority (80.99%) of the respondents who got loans from MTN mobile money services reported the loan obtained last time to be adequate. Chi-square test of association

confirmed that MTN mobile money savings has a positive effect on improving access to FSP. This shows that MTN mobile money services makes significant contribution to financial availability and ensures financial inclusion.

From the literature; in 2015, MM was in 93 countries and there were over 270 MM services offered. Globally, 32 million transactions are processed via MM on an average day (Tavneet Suri 2017). Peša (2018) reported that MM agents have been established in rural, peri-urban and informal urban settlements allowing users living in these areas to complete transactions in their local communities. The liquidity of MM as well as the speed of transactions are also major benefits to MM (Donovan 2011). Kyungha (2022) study found that mobile money has significantly decreased the proportion of women in Nairobi excluded from using financial services. Mobile money has enabled women to benefit from instant remittance and payment services, and has offered a means of storing money safely, which is an attribute particularly valued by younger women and those with lower levels of educational attainment and income. Mobile money has improved levels of financial inclusion by increasing women's access to various financial channels from which they were previously excluded. According to CUTS International (2020), mobile money has proved to be a driver of financial inclusion which in turn is beneficial to socio-economic development. Between 2015 and 2017, the number of active mobile money agents in Zambia is reported to have doubled, from 3,225 to 6,590.

The effect of MTN in improving access to financial services and products among women

Concerning improvement in access to financial services and products; majority (79.44%) of the respondents agreed that they have seen an improvement in access to financial services and products. With regard to accessing MTN mobile money services, the study found that 83.33% of women had access to MTN money saving, 78.89% of the women indicated access to MTN credit loans, 81.67% indicated access to MTN bill payments, and 74.44% had access to borrowing airtime loans on MTN. This shows that MTN significantly contributes to ensuring financial inclusion through availability and access to financial services. The results for Pearson chi-square also indicates a positive association between MTN credit loans and improved access to FSP, MTN bill payment system has a positive effect on improving access to FSP. MTN mobile money services has significant positive contribution to improving access to FSP. From the logistic regression

analysis, accessing MTN loans has significant contribution to improving financial access for women.

From the literature, Leora et al. (2015) reported that the introduction of new innovative technologies, such as MM, has the potential to reduce some of the barriers that contribute to the exclusion of women from the formal financial system, particularly affordability and availability, and thereby increase financial inclusion. For many rural and poor urban communities in Africa, formal financial services, in particular banks, are not accessible. MM gives underserved communities affordable and secure access to formal financial services including savings, credit, bill payment, and money transfers (Peša 2018; Donovan 2011; Kabala and Seshamani 2016a).

Kakra (2018) reported that mobile money is one of the best means of internal remittances in Ghana. Mobile money has enabled Ghanaians to transfer funds, pay bills, and sometimes school fees, anytime and anywhere, regardless of the subscriber's level of education. Arguably, mobile money has become one of the surest, if not the surest, payment system. Kakra (2018) study used Logistic regression analysis to test the predictive ability of the variables in the model. The study found that mobile money subscribers have a higher likelihood of opening a bank account. Mobile money is used not only for savings but also influences loan requests, and this evolution of mobile money expands in more mature markets. It has been observed that Ghanaians, over the years, are increasingly becoming more financially inclusive with the contribution of mobile money. Kabala et al. (2021) study findings indicate that mobile money has a positive influence on financial inclusion. It is easier to open accounts with mobile money kiosks than with formal banks. Mobile money services are conveniently located where the unemployed, aged and other segments of the unbanked population are found. Mobile money services is used to send and receive money, pay utility bills and purchase airtime.

The effect of MTN in reducing the cost of obtaining financial services and products among women

With regard to reduction in the cost of obtaining financial services and products; a slight higher number (59.45%) of respondents agreed that there's reduced cost of obtaining financial services and products. Further, 60.56% of the respondents indicated that MTN money withdraw cost is affordable, 74.44% of the respondents indicated the charges on MTN bill payments to be affordable, and 61.11% of the respondents indicated the interest on MTN loans to be affordable.

From the results above, majority of the respondents indicated the costs over MTN mobile services to be affordable. The Chi-square test of association and the logistic regression analysis also confirmed that MTN mobile money services has contributed to reducing the cost of obtaining FSP.

A comparative study of 26 banks internationally found that alternative formal financial services were 19 percent more expensive than branchless banking, including MM. The difference in price doubled for smaller transaction amounts and money transfers using informal financial services (Donovan 2011). Heeks (2018) study found that the cost of sending 100 USD internationally decreased from \$8 USD to \$2 USD because of MM. Lower costs are particularly appealing for low income individuals as they have less disposable income. Another benefit of MM is that it is relatively safe compared to cash and other alternatives. CUTS International (2020) stated that by lowering costs of transactions, enabling convenience of paying bills and making purchases from a mobile phone, mobile money can increase economic activity. With costs lower, in relation to those in the traditional banking sector, people are encouraged to transact further and money is allowed to multiply. McKay and Pickens (2010) found that transactions on the mobile money platform were relatively cheaper than those of conventional banks. Similarly, in Kenya M-PESA was one-third to one-half as expensive as alternative systems (Mbiti and Weil, 2011). Kabala et al. (2021) study findings indicated that mobile money has a positive influence on financial inclusion.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

According to the World Bank (2016), financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs for transactions, payments, savings, credit and insurance delivered in a responsible and sustainable way. One of the key drivers through which financial inclusion agenda is driven, is by Mobile money, which has grown rapidly over the past decade. Therefore, this study assessed the effect of MTN mobile money services on improving financial inclusion amongst women in the country.

To achieve the research objectives, the study used descriptive and causal research designs, a survey was conducted involving women in three districts; Kafue, Chilanga and Chongwe. The study

further used systematic random sampling to select 180 women in the districts to be part of the survey. Data analysis was done through obtaining descriptive statistics; e.g. the mean, frequencies and percentages, as well as employing chi-square test of association and logistic regression analysis.

The study found that 93.9% of the respondents had sufficient MTN vendors for mobile money services, 83.9% had access to the vendors in less than 30 minutes walkable distance. In addition, the women indicated accessing mobile money loans, 3 times (2.9718) on average. 80.99% of the women who got loans from MTN mobile money services reported the loan obtained last time to be adequate. The chi-square test also found that MTN mobile money savings has a positive effect on improving the availability of FSP.

The study found that majority (79.44%) of the women had seen an improvement in access to financial services and products. 83.33% of the women had access to MTN money saving, 78.89% of the women indicated access to MTN credit loans, 81.67% indicated access to MTN bill payments, and 74.44% had access to borrowing airtime loans on MTN. The Pearson chi-square results indicated a positive association between MTN credit loans and improved access to FSP, MTN bill payment system and borrowing airtime on MTN had positive effects on improving access to FSP. Logistic regression analysis results showed that accessing MTN loans has a significant positive effect on improving financial access and reducing the cost of obtaining FSP. A slight higher number (58.45%) of women agreed that there's reduced cost of obtaining financial services and products. In rating, 60.56% of women indicated that MTN money withdraw cost is affordable. 74.44% of women indicated the charges on MTN bill payments to be affordable, 61.11% of the women indicated the interest on MTN loans to be affordable.

The Chi-square test of association and logistic regression analysis also found that MTN mobile money services has a significant positive effect on reducing the cost of obtaining financial services and products. Based on the results presented, the study successfully achieved all its objectives and gave the following recommendations to increase the impact of mobile money services on financial inclusion.

6.2 Recommendations

1. MTN Zambia and other mobile money providers should increase the amount of loans given to women, as the mobile money services contributes significantly to financial inclusion.
2. MTN Zambia and other mobile money service providers should consider reducing the interest on loans for women, especially repeat borrowers who pay back within short periods of time (less than 30 days).
3. MTN Zambia and other mobile money providers should also consider reducing the withdraw charges. Withdraw charges was pointed to be high by a significant number of respondents
4. MTN Zambia and other mobile money providers must eliminate auto deduction of loans, both for money and airtime loans. Auto deduction may result in borrowers not using those sim-cards making it even more difficult to recover the loans.

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