

**THE IMPACT OF MOBILE MONEY ON ECONOMIC
GROWTH IN UGANDA**

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Date: **11/09/2024**

APPROVAL

This research report by Mukyala Triny Ashley C of Reg. No. S21B34/036 entitled “**THE IMPACT OF MOBILE MONEY ON ECONOMIC GROWTH IN UGANDA**” has been under my supervision and is now ready for submission to the School of Business board of examinations with my approval.

Signature: 

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Date: 06/09/2024

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ABSTRACT

This dissertation looks at how the introduction of mobile money in Uganda has economically impacted the country by focusing mainly on how it has contributed to financial inclusion, poverty reduction and its role in agriculture development. It has caused a great change in Uganda's financial sector since it has enabled people living in areas that have limited access to the usual banking services to efficiently carry out their financial transactions because mobile money is easily accessible and safe. Therefore, there has been an increase in financial transactions in the country, including transactions of people residing in rural areas.

This study analyzes the relationship between mobile money use and economic growth in Uganda with descriptive statistics, correlation analysis and regression analysis using secondary data from sources such as the Bank of Uganda and the World Bank. The research explores how the number and value of mobile money transactions affect financial inclusion and poverty reduction. It also shows that mobile money plays a key role in increasing financial inclusion by supporting savings, providing access to credit and facilitating financial transactions. There are also some challenges faced with the use of mobile money which are addressed with recommendations made to policy-makers in order to try and solve them. Nonetheless, mobile money should be maximized in order for the country to reap its full benefits.

ABBREVIATIONS

COVID-19 – Corona Virus Disease 2019

GDP - Gross Domestic Product

GSMA – Global System for Mobile Communications

IMF - International Monetary Fund

MSME(s) – Micro Small and Medium Enterprise(s)

MTN – Mobile Telecom Network

OLS - Ordinary Least Squares

SME(s) – Small and Medium-sized Enterprise(s)

USAID – United States Agency for International Development

USD – United States Dollar(s)

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In the past recent years, mobile money has greatly changed the financial sector in Uganda. The introduction of mobile money services by MTN Uganda in 2009 brought about a very big change in the country's financial sector. It has allowed users to carry out their financial transactions while using their mobile phones, without them needing to open traditional bank accounts (GSMA, 2017). This has addressed the financial services needs of the population that has limited or no access to banking services thus promoting a broader economic participation (Jack and Suri, 2011).

Ever since mobile money was introduced in Uganda, the country has seen a steady increase in financial digital transactions. By 2021, the value of mobile money transactions contributed to 94 percent of the country's GDP, which is one of the highest penetration rates in the whole of Africa (IMF, 2023). This continuous growth in mobile money usage has provided many people who faced challenges accessing financial services most especially in rural areas where infrastructure for banking is very rare. The growth of mobile money services has enormously contributed to the improvement of financial inclusion and the increase of economic growth in Uganda.

As of May 2022, the registered mobile money users in Uganda had exceeded 34 million which showed a very large yearly increase in people holding mobile money accounts from 2015 to 2022. In the first quarter of 2022 alone, the value of mobile money transactions in Uganda reached 8.2 billion US dollars (Statista Research Department, 2024). This rapid growth shows how big a role mobile money has played in improving Uganda's financial sector. As seen during the COVID-19 pandemic where there was a rapid increase in the adoption of digital financial services as a way to survive the economic bottlenecks.

The World Bank has emphasized that digital transformation in Uganda is very important because it has created a steady pathway to economic recovery and growth, especially during and after the pandemic. Digital financial services, in which mobile money takes the lead, are seen as very important for improving financial inclusion, reducing poverty, and increasing economic development. These services have enabled secure, fast and cost-effective financial

transactions all over the country, contributing significantly to the growth of Uganda's gross domestic product (GDP).

Mobile money has not only facilitated everyday transactions but has also empowered small and medium sized enterprises (SMEs) by providing them with access to new markets and financial products. This has promoted increment of entrepreneurial activities and has also boosted the overall economic condition of the country (Kikulwe, Fischer and Qaim, 2014). The growing economy around mobile money, including mobile loans and savings products, has gone ahead to increase its impact on Uganda's economy by bringing in more people into the formal financial system (Ndiwalana, Morawczynski and Popov, 2010).

Uganda's regulatory environment has also largely contributed to the success of mobile money services. The central bank, Bank of Uganda, has implemented supportive policies which have provided a very strong and effective system that has ensured the safety and reliability of mobile money transactions. The establishment of the National Payment Systems Act, 2020, has also contributed to this. These regulatory measures have built people's confidence in the financial system which has encouraged more users to adopt mobile money services (Bank of Uganda, 2022).

1.2 Statement of the problem

While mobile money services have rapidly expanded in Uganda since their introduction by MTN in 2009, the exact economic impact of these services is not fully understood. Mobile money has provided and increased financial access to many people who have difficulty accessing banks and don't use banking services, with the value of transactions reaching 94 percent of Uganda's GDP in 2021. However, there is a lack of precise, empirical evidence on how mobile money influences critical economic factors such as GDP growth, poverty reduction and financial inclusion in Uganda.

To add on, challenges such as regulatory constraints, cybersecurity risks and the difference in digital knowledge between urban and rural areas reduces the mobile money's ability to effectively increase economic growth.

This study looks to fill these gaps by providing an analysis of the economic impact of mobile money in Uganda by focusing on its contributions to economic growth, financial inclusion and poverty reduction. Despite the rapid growth and adoption of mobile money services in Uganda, there is a need to critically assess its impact on economic growth and financial inclusion. Much as mobile money has made financial transactions more accessible, we're not quite sure about

how effective it is overall in the thrive for economic development and reduction in income inequality.

1.3 Purpose of the study

The purpose of this study is to examine the impact of mobile money on economic growth in Uganda.

1.4 Objectives of the study

- To analyze the correlation of mobile money usage with economic growth in Uganda.
- To assess the effect of mobile money on financial inclusion and poverty reduction.
- To identify the challenges and opportunities associated with mobile money's role in agricultural development in Uganda.

1.5 Research questions

- What is the correlation between mobile money usage and economic growth in Uganda?
- What is the effect of mobile money on financial inclusion and poverty reduction in Uganda?
- What challenges and opportunities are associated with mobile money's role in agricultural development in Uganda?

1.6 Scope of the study

1.6.1 Content scope

This study focuses on the impact of mobile money on economic growth, financial inclusion and poverty reduction in Uganda.

1.6.2 Geographical scope

The study is geographically limited to Uganda in places where mobile money services have been widely adopted.

1.7 Justification of the study

To the academic field: This study contributes to the proper understanding of the economic impact of mobile money, providing data that can be used to refine theoretical models of financial inclusion and economic growth in developing countries.

To policy makers: The study offers insights into the economic benefits of mobile money, which can assist in making policy decisions aimed at promoting financial inclusion and economic growth.

1.8 Conceptual framework

This dissertation bases on the theory of economic development to properly understand how mobile money impacts Uganda's economy by focusing on how these services contribute to economic growth, financial inclusion, and the challenges and opportunities that come about with the usage of these services.

The theory of economic development, as explained by Schumpeter (1911), talks about the role of innovation as a major contributor to economic growth. Mobile money services in Uganda show such an innovation by changing the way financial transactions are carried out and increasing economic participation. Mobile money has helped millions of people to have access to the formal economy by providing a secure and less costly platform for financial transactions, therefore contributing to economic growth and poverty reduction (Demirgüç-Kunt et al., 2018). This theory enables us to properly analyze how mobile money as a financial innovation has led to economic development in Uganda by improving access to financial services and bringing in more people into the economy.

Studies continue to support this theory by talking about how mobile money has improved financial inclusion and economic development in Uganda. For example, Suri and Jack (2016) show that mobile money services have reduced transaction costs and increased savings among users, therefore increasing their economic resilience. A report by the World Bank (2019) further supports this view and shares that mobile money has enabled small-scale entrepreneurship to grow by providing easy access to credit facilities and enabling more efficient financial management. This goes hand in hand with Schumpeter's theory since these developments show how innovation in financial services can lead to increased economic development.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Mobile money has changed the financial environment in many developing countries, mostly in Sub-Saharan Africa where it's very popular. The introduction of mobile money services in Uganda by MTN Uganda in 2009, has greatly contributed to the country's economic development (World Bank, 2022). Unlike the normal traditional banking systems that need buildings and a lot of capital for investment, mobile money operates over telecommunication networks. This has made it easier for to the population to access, including those in remote areas (Demirgüç-Kunt et al., 2022).

The Global System for Mobile Communications (GSMA) mentions that by 2021, over 1.2 billion mobile money accounts had been registered globally, with Sub-Saharan Africa accounting for nearly half of these (GSMA, 2021). Uganda is one of the countries leading in the fast adoption of mobile money, with over 34 million registered users by 2022 (Bank of Uganda, 2022). This high adoption of mobile money is mostly because it meets the needs of a diverse population, from people living in urban areas to those living in rural areas.

Mobile money has gone beyond the usual person-to-person transfers by including a wide range of financial services such as savings, credit, and insurance. The development of mobile money platforms has made them very important in Uganda's financial ecosystem, driving economic activities and improving the livelihoods of millions (Jack & Suri, 2014). The evolution of mobile money in Uganda shows how innovative the financial services sector in Uganda is and how quickly it adapts to change.

2.2 Mobile money and economic growth

Mobile money's contribution to economic growth in Uganda is due to several factors. The first one being that it enhances financial intermediation by allowing money to circulate more efficiently within the economy. The ability to transfer money quickly and safely has reduced the costs of transactions and has increased the velocity of money, which is very important for stimulating economic activities (Mbiti & Weil, 2011). The faster circulation of money makes trading easy and quick, supports small businesses, and encourages consumption. All these aspects are very important for economic growth.

A study by Beck et al. (2018) argues that mobile money has particularly benefited micro, small, and medium enterprises (MSMEs), which are the backbone of Uganda's economy. Mobile money has enabled them to expand their operations and increase their profitability by these businesses with reliable and accessible means of conducting financial transactions. The growth in the MSME sector has significantly contributed to the overall economic development of Uganda.

To add on, mobile money has played a very crucial role in improving Uganda's resilience to economic shocks. During the COVID-19 pandemic, mobile money services enabled economic activities to continue despite the disruptions caused by the lockdowns imposed and social distancing measures (IMF, 2023). Mobile money has also helped businesses and individuals to maintain their economic activities during challenging times through the facilitation of remote transactions which has supported the broader economy.

The relationship between mobile money and economic growth is clearly seen in how mobile money transactions contribute to Uganda's GDP. According to a report published by the International Monetary Fund (IMF, 2023), mobile money transactions accounted for 94% of Uganda's GDP in 2021. This statistic confirms the importance of mobile money in the country's economy.

2.3 Mobile money and financial inclusion

Financial inclusion is one of the most important objectives for many developing nations, with mobile money playing a pivotal role in Uganda. Financial inclusion refers to ensuring that individuals and businesses have access to affordable and useful financial products and services that meet their needs (Demirgüç-Kunt et al., 2022). Mobile money has proven particularly effective in reaching populations traditionally excluded from the formal banking sector.

The success of mobile money in promoting financial inclusion in Uganda is underscored by the rapid increase in registered mobile money accounts. According to Munyegera and Matsumoto (2016), the number of mobile money users in Uganda has grown significantly since its introduction, with over 34 million registered accounts by 2022. This widespread adoption has markedly impacted financial inclusion, particularly among rural and low-income populations.

One of the key advantages of mobile money is its capacity to facilitate remittances, both domestic and international. Remittances are a crucial income source for many Ugandan households, and mobile money has simplified and reduced the cost of sending and receiving funds. The World Bank (2022) notes that mobile money has lowered remittance costs by cutting out intermediaries and enabling direct transfers. This efficiency has increased the disposable income available for household consumption, savings and investment, thereby contributing to poverty alleviation.

Moreover, mobile money has expanded access to credit for individuals and businesses who would otherwise be excluded from formal credit markets. Mobile money platforms provide a digital transaction record, allowing financial institutions to assess users' creditworthiness. This has led to the development of new credit products tailored to the needs of low-income individuals and small businesses (Jack & Suri, 2016). As a result, many Ugandans have been empowered to invest in income-generating activities which has enhanced their economic security and further advanced financial inclusion.

Despite these successes, several challenges remain in fully harnessing mobile money's potential for financial inclusion. Digital literacy is a significant barrier, particularly among older and rural populations, limiting the use of mobile money services. Gender disparities also persist, with women less likely to own mobile phones or have access to mobile money accounts, which can exacerbate existing inequalities (GSMA, 2023). Additionally, the regulatory environment can either hinder or promote the effective use of mobile money services. Ensuring consumer protection, managing the risks of digital financial services, and fostering innovation while maintaining financial stability are critical regulatory challenges (Suri & Jack, 2016).

To maximize mobile money's contribution to financial inclusion in Uganda, these challenges must be addressed. Enhancing digital literacy, particularly for women and rural populations, improving gender equality in mobile phone ownership and creating a supportive regulatory framework are essential steps. By tackling these issues, Uganda can further leverage mobile money as a tool for economic empowerment and poverty reduction.

2.4 Mobile money and agricultural development

For a long time, agriculture has been a major important contributor to Uganda's economy since it contributes a great percentage to the GDP and also employs a great percentage of the population (Kikulwe et al., 2014). In recent years, mobile money has emerged as a great helper

in the growth and development of this sector by providing financial services that were difficult for smallholder farmers to access before. Services such as borrowing, making payments and offering the choice of saving, to mention but a few, are very important in improving agricultural productivity and economic stability (Aker et al., 2021).

Mobile money has had a very positive impact on agricultural development whereby Aker et al. (2021) emphasize that mobile money makes the payment process for agricultural produce faster and also ensures security. It therefore reduces the risks that are associated with cash transactions like theft, reception of counterfeit money, etc. This has increased the confidence farmers have in digital transactions and has enabled farmers to save and obtain the funds they need to invest in their agricultural activities thus promoting income growth and improving productivity.

Mobile money has reduced the financial gap for low-income farmers by facilitating access to agricultural credit, which aids in the acquisition of agricultural inputs such as seeds, fertilizers and agricultural tools. The ability to access credit through mobile platforms has allowed farmers to enhance their production capacity, leading to higher yields and improved livelihoods (Kikulwe et al., 2014). The availability of credit also plays a very important role in enabling farmers to manage risks associated with agricultural production, such as unpredictable weather conditions and many others (Munyegera & Matsumoto, 2016).

However, much as there are benefits, there are also some challenges that people practicing agriculture face while using these mobile money platforms. Network coverage is limited in rural areas wherein most of the farming and agricultural activities are practiced, thus hindering the widespread adoption of mobile money services in the country (World Bank, 2022). Additionally, most rural farmers are not well conversant with mobile phones and thus the digital literacy among rural farmers is a great barrier since many rural farmers lack the skills needed to navigate mobile money platforms effectively (Kikulwe et al., 2014). Addressing these challenges is very important for maximizing mobile money's potential to support agricultural development in Uganda.

Research conducted by the World Bank (2022) further shows that mobile money has a positive impact on agricultural value chains by improving transaction efficiency and reducing costs. Agricultural value chains basically refer to systems of people that work in many different stages of production. This is mostly beneficial in rural areas where it is difficult to access the traditional banking. The usage of mobile money to facilitate agricultural practices can also

contribute to financial inclusion by providing smallholder farmers with the tools needed to participate more fully in the economy (Aker et al., 2021).

The use of mobile money in Uganda's agricultural sector is also supported by initiatives aimed at promoting financial literacy and expanding network coverage. These initiatives are designed to ensure that all farmers, regardless of their location or level of digital skills, can access and benefit from mobile financial services (USAID, 2018). Such efforts are very important in overcoming the challenges associated with mobile money adoption and ensuring that its benefits are realized across the entire agricultural sector (World Bank, 2022).

To conclude, mobile money has the capacity to significantly impact agricultural development in Uganda by providing farmers with access to essential financial services. Much as there are challenges with mobile money such as limited network coverage and limited digital literacy, efforts are being made to address some of these issues. Therefore, by enhancing financial inclusion, mobile money can play a very critical and important role in changing Uganda's agricultural sector for the better, thereby improving productivity, income, and overall economic growth.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methods used to study the impact of mobile money on Uganda's economic development. The study uses secondary data to analyze the relationship of mobile money use with various economic indicators such as financial inclusion, poverty reduction and agricultural development. This chapter discusses the research design, data sources, data analysis techniques and limitations related to the methodology.

3.2 Research design

A quantitative research design was used for this study, focusing on statistical analysis of already existing data to draw conclusions about the relationship between mobile money usage and economic outcomes in Uganda. A quantitative approach is appropriate for this study because it allows for the examination of trends, correlations, and causal relationships between variables. The research was designed following a descriptive and correlational approach, purposely to identify and analyze patterns within the secondary data.

3.3 Data sources

The results of the study are based on the analysis of secondary data. The data was obtained from the World Bank database which offers datasets on economic indicators such as GDP growth, poverty rates, and the impact of digital financial services in Uganda. It was then compared with data from different sites such as the Bank of Uganda and the International Monetary Fund (IMF) for purposes of accuracy.

3.4 Data collection methods

The data for this study was collected from the secondary sources listed above mainly focusing on data that is both relevant and recent. The data obtained is from 2009 to 2022 to ensure that the analysis reflects current trends and practices in the mobile money sector in Uganda. Data was extracted from different databases, reports, and publications, ensuring that it aligns with the study's objectives and research questions.

3.5 Data analysis techniques

The model used in this analysis was ordinary least squares (OLS) and the analysis of the collected secondary data was executed using different techniques as shown below.

1. **Descriptive statistics:** This is basically a summary of the data. It uses mean, median, standard deviation and range to provide a brief overview of mobile money usage and economic indicators in Uganda. These different measures play a great role in the analysis and give a better understanding of the data used as shown in the next chapter.
2. **Correlation analysis:** Correlation analysis determines the strength and direction of the relationship between mobile money usage and economic variables such as GDP growth, financial inclusion, and poverty reduction.
3. **Regression analysis:** Multiple regression models are used to assess the impact of mobile money on different outcomes while controlling for other variables. This helps in identifying the direct and indirect effects of mobile money on economic development.
4. **Time series analysis:** Time series analysis is conducted, specifically to test for stationarity in the data in economic order to ensure usage of accurate results to generate inferences.

3.6 Validity and reliability

The validity and reliability of the data are ensured by selecting high-quality and reliable data from reputable open-data sources. The World Bank, Bank of Uganda and IMF are well known for their accuracy when it comes to data reporting. In addition, the decision to use data from multiple sources makes the findings much more reliable. The study also tries to address likely issues that are expected to arise while using secondary data, such as outdated information and inconsistencies across sources and addresses these by focusing on the available recent data.

3.7 Ethical considerations

As the study is based on secondary data, there are few ethical concerns. However, all data has been used in compliance with the ethical guidelines of academic research, ensuring proper citation and acknowledgment of the original sources. The data used in the study is available and has no restrictions since it was obtained from open-data sources.

3.8 Limitations of the study

The reliance on secondary data presents certain limitations. The study is constrained by the availability and quality of data from the selected sources. The data does not fully capture the impact of mobile money on financial inclusion and poverty reduction in Uganda. To add on, the study may not account for all variables influencing the economic outcomes of interest since the analysis is based on pre-existing datasets.

3.9 Conclusion

This chapter has outlined the methodology employed in the study, emphasizing the use of secondary data obtained from reputable open-data sources. The quantitative analysis techniques, including descriptive statistics, correlation analysis, regression analysis and trend analysis provide a good framework for assessing the impact of mobile money on Uganda's economic development.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter provides the presentation and explanation of the data sets as analyzed in STATA. It is mostly comprised of tables obtained from the analysis.

4.2 Correlation

	ofGDPm Uganda~P	
ofGDPm	1.0000	
UgandasGDP	0.9697	1.0000

Table 1: Correlation analysis

The table above shows the correlation of Uganda's GDP(Uganda~p) with the percentage of mobile money's contribution to Uganda's GDP (ofGDPm). Since the value of the correlation is 0.9697, this indicates that there is a very high correlation between the two variables.

4.3 Descriptive statistics

`. summarize Numberofmobilemoneytransactio`

Variable	Obs	Mean	Std. Dev.	Min	Max
Numberofmo~o	14	1.55e+09	1.72e+09	2836186	5.18e+09

`. summarize Valueofmobilemoneytransaction`

Variable	Obs	Mean	Std. Dev.	Min	Max
Valueofmob~n	14	5.25e+07	5.16e+07	132575.2	1.66e+08

`. summarize Outstandingbalancesonactivemo`

Variable	Obs	Mean	Std. Dev.	Min	Max
Outstandin~o	14	354374.4	355995.3	1670.51	1366173

Following the statistics displayed, each one of the variables is displayed with 14 observations. These observations are the years from 2009 to 2022.

In the first variable, we see that the average number of transactions is approximately 1.55 billion. This shows that there is a high volume of mobile money transactions in Uganda therefore indicating that mobile money services are used on a large scale. The standard

deviation however is very large, at 1.72 billion, which is even greater than the mean. This high standard deviation shows a significant variability in the number of transactions across the observations which means that there were both very high and very low transaction volumes over the years. The minimum number of transactions recorded is approximately 2.8 million, and the maximum is about 5.18 billion.

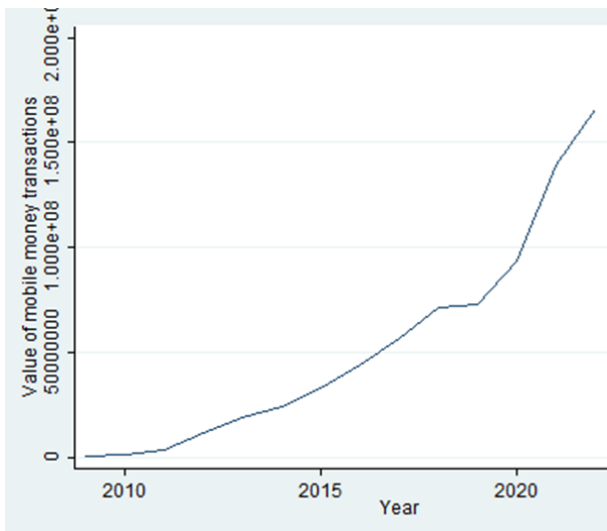
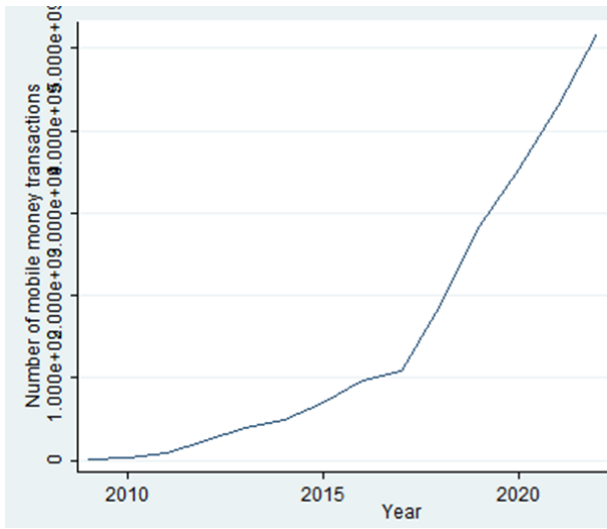
For the second variable, the value of mobile money transactions shows the total amount of money transacted through mobile money services over the given time period. In the descriptive statistics, we see an average transaction value of around 52.5 million dollars which is a significantly high value. There is a high level of variability in the value of transactions since the standard deviation which is 51.6 million USD is quite high. This variability suggests that there were periods with very low values of transactions and others with very high values of transactions probably because of different economic conditions in those different times. The minimum value recorded is about 132,575 USD while the maximum value is significantly higher at approximately 166 million USD.

For the third variable (outstanding balances), the mean outstanding balance is approximately 354,374 USD which represents the average amount of money remaining in mobile money accounts. The standard deviation for this variable is 355,995 USD, almost equal to the mean, suggesting that there is variability in the outstanding balances. The minimum outstanding balance is recorded at 1,670 USD, while the maximum balance reaches up to 1.37 million USD. This wide range shows that some users maintain very low balances, possibly using mobile money primarily for immediate transactions, while others keep significantly higher balances, potentially using mobile money accounts for saving purposes.

4.4 Regression

As mentioned before, the secondary data used in this study was time series data ranging from 2009 to 2022. Before carrying out regression, the data was tested for stationarity and a trend was realized in all three variables as shown by the graphs below. The three variables being number of mobile money transactions (numberofmobilemoneytransactio), value of mobile money transactions (Valueofmobilemoneytransaction) and outstanding balances on active mobile money accounts (Outstandingbalancesonactivemo).

Before differencing



The values were then differenced three times in order to obtain more stationary data as shown by the graphs below. Stationarity in time series data is important for the generation of accurate and non-spurious results so as to make them reliable for inference.

After differencing



After confirming stationarity in the data, the differenced values were used to run a regression and yielded the results shown below with the number of observations reducing from 14 to 11 because of differencing.

Source	SS	df	MS			
Model	2.7425e+15	2	1.3713e+15	Number of obs =	11	
Residual	4.4621e+14	8	5.5776e+13	F(2, 8) =	24.59	
Total	3.1887e+15	10	3.1887e+14	Prob > F =	0.0004	
				R-squared =	0.8601	
				Adj R-squared =	0.8251	
				Root MSE =	7.5e+06	

D3Valueofmobilemoneytransactio	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
D3Numberofmobilemoneytransactio	-.0243405	.0069754	-3.49	0.008	-.0404259	-.0082551
D3Outstandingbalancesonactivemo	-58.63281	8.380479	-7.00	0.000	-77.95823	-39.30739
_cons	1740754	2309682	0.75	0.473	-3585381	7066890

Figure 1: Regression results

We have our regression equation as:

$$y = \beta_0 + X_1\beta_1 + X_2\beta_2 + \varepsilon$$

The dependent variable was “D3Valueofmobilemoneytransactio” while the others were the independent variables. According to the results obtained, since the R-squared is 0.8601, this means that 86.01% of the dependent variable can be explained by the independent variables. The adjusted R squared value (0.8251) accounts for the number of predictors and suggests that this model is a good fit.

The F-statistic, $F(2,8) = 24.59$, is high with a p-value of 0.0004. This shows that the model is statistically significant at 1% level. The two independent variables are statistically significant at 1% level since their p-values are both less than 0.05. The p-value of the constant however shows that the constant is not statistically significant since its p-value is above 0.05.

The coefficient of the first independent variable (D3Numberofmobilemoneytransactio) shows that for every unit increase in the value of mobile money transactions, the number of mobile money transactions reduces by 0.243405 keeping other independent variables constant.

The coefficient of the second independent variable (D3Outstandingbalancesonactivemo) shows that for every unit increase in the outstanding balances on active mobile money accounts, the number of mobile money transactions reduces by 58.63281 keeping other independent variables constant.

The value of mobile money transactions increases by 1740754, holding all other independent variables constant. However, since its p-value is greater than 0.05, it is not statistically significant.

The new regression equation is therefore written as

$$y = -0.243405\beta_0 - 58.63281\beta_1 + 1740754$$

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter is comprised of a discussion of the findings shown in the previous chapter (chapter four), conclusions from the findings and any necessary recommendations for future research.

5.2 Discussion of findings

5.2.1 Mobile money and economic growth

The correlation analysis as shown and presented in chapter four shows that there is a very strong positive relationship between mobile money usage and Uganda's GDP since the correlation coefficient is 0.9697. This is similar to what is included in other studies that emphasize how mobile money contributes to economic growth by easing financial access, reducing costs incurred during transactions and increasing the rate at which money moves within the economy (Mbiti & Weil, 2011).

The significant variability in mobile money transactions, as indicated by the descriptive statistics, suggests that mobile money has become a very important and crucial component of Uganda's financial system, pushing economic activities across various sectors, more so in the MSME sector (Beck et al., 2018).

We also see that mobile money played a big role in economic resilience during the COVID-19 pandemic. The ability of mobile money to facilitate remote transactions and to promote the continuity of economic activities shows how important it is in maintaining economic stability and supporting growth during difficult times (IMF, 2023).

5.2.2 Mobile money and financial inclusion

As seen from the regression analysis results in chapter four, the R-squared value of 0.8601 shows that the independent variables explain 86.01% of the variation in the value of mobile money transactions. This shows that mobile money plays a very big role in facilitating financial transactions in Uganda. In the analysis, it also shows that the number of mobile money transactions has a negative but significant relationship with the value of transactions ($\beta = -0.0243$, $p < 0.01$). This could be interpreted as more frequent, smaller transactions being conducted as mobile money becomes more accessible, particularly among lower-income groups therefore improving financial inclusion by bringing in more people into the financial sector.

This result is similar to the findings from Munyegera and Matsumoto (2016), who demonstrated that mobile money significantly improves household welfare in rural Uganda, particularly by facilitating remittances. However, while mobile money has a positive overall impact, due to low levels of digital literacy in rural areas, it is not as effective as we would wish for it to be.

In order to maximize the benefits of mobile money for financial inclusion, interventions should be taken in order to improve digital literacy in rural areas. Such measures would ensure that the positive impacts of mobile money are more evenly distributed across different demographic groups.

5.2.3 Mobile money and poverty reduction

The analysis suggests that mobile money has a positive impact on poverty reduction in Uganda, primarily through its role in increasing financial inclusion and enabling income-generating activities. By providing access to financial services, mobile money empowers individuals and businesses to invest in productive activities, manage risks, and improve their livelihoods (Kikulwe et al., 2014). The ability to access credit through mobile platforms is particularly important for smallholder farmers and MSMEs, who can use these funds to expand their operations and increase their income.

Nonetheless, the study acknowledges that while mobile money has made significant strides in reducing poverty, its impact is not uniformly distributed across all population segments. The challenges related to network coverage, digital literacy, and gender disparities may limit the extent to which mobile money can contribute to poverty alleviation in certain areas (World Bank, 2022). Therefore, targeted interventions are needed to address these barriers and ensure that the benefits of mobile money reach the most vulnerable populations.

5.3 Conclusions

Based on the findings of this study, several conclusions can be drawn about the impact of mobile money on economic growth, financial inclusion, and poverty reduction in Uganda:

Mobile money is a key driver of economic growth. We conclude the study by saying that mobile money has a huge positive impact on Uganda's economic growth mainly by facilitating financial transactions and improving the economy's ability to continue running even during economic downturns as seen during the COVID-19 pandemic. This therefore shows how important mobile money is to the economy.

It has also greatly improved financial inclusion in Uganda, more so for people living in rural areas and those earning low incomes. Its ability to provide accessible and affordable financial services has empowered individuals and businesses therefore contributing to economic development and poverty reduction.

Much as mobile money has a great economic impact, it has been limited by challenges such as digital literacy and also limited access to mobile phones for certain groups of people in the country. Addressing these challenges is important for ensuring that mobile money can contribute more effectively to economic development and poverty alleviation.

5.4 Recommendations

Telecommunication companies should extend and improve their network coverage to the areas with limited access. They should also recruit and train more mobile money agents and distribute them in those areas. This will maximize the impact of mobile money on financial inclusion since more and more people will be able to use the services. Therefore, big efforts should be made to expand network coverage in rural areas. This could be done by engaging in public-private partnerships to invest in telecommunications infrastructure, ensuring that all Ugandans have access to mobile money services regardless of their location.

5.5 Suggestions for future research

Studies on the impact of mobile money from different countries and regions should be conducted and used to compare to the studies undertaken in Uganda. This will enable policy makers to best identify important and efficient techniques that might be used in other countries and might necessarily be used or incorporated in Uganda. It could be in form of lessons which could be applied to Uganda in order to better the effectiveness of mobile services in Uganda.

5.6 Conclusion

In conclusion, mobile money has had a transformative impact on Uganda's economy, driving economic growth, enhancing financial inclusion, and contributing to poverty reduction. However, to fully realize the potential of mobile money, the challenges explained should be solved. By enhancing digital literacy and expanding network coverage, Uganda can efficiently use mobile money as a tool for economic development and poverty alleviation.

References

- Aker, J. C., Boumnijel, R., McClelland, A., & Tierney, N. (2021). Payment mechanisms and antipoverty programs: Evidence from a mobile money cash transfer experiment in Niger. *Economic Development and Cultural Change*, 65(1), 1-37.
- Bank of Uganda. (2022). Annual report on mobile money transactions. Kampala, Uganda: *Bank of Uganda*.
- Beck, T., Pamuk, H., Ramrattan, R., & Uras, B. R. (2018). Payment instruments, liquidity, and the Bank Lending Channel: Evidence from Uganda. *Journal of Financial Intermediation*, 36, 38-60.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. *The World Bank*.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. *The World Bank*.
- GSMA. (2017). State of the Industry Report on Mobile Money 2017. *GSMA*.
- GSMA. (2021). State of the Industry Report on Mobile Money 2021. *GSMA*.
- GSMA. (2023). Connected Women: The Mobile Gender Gap Report 2023. *GSMA*.
- International Monetary Fund (IMF). (2023). Digital Financial Services: COVID-19 Response and Beyond. *Finance & Development*, 60(1), 24-27.
- Jack, W., & Suri, T. (2011). Mobile money: The economics of M-PESA. *National Bureau of Economic Research Working Paper Series*, 16721.
- Jack, W., & Suri, T. (2016). Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution. *American Economic Review*, 104(1), 183-223.
- Kikulwe, E. M., Fischer, E., & Qaim, M. (2014). Mobile money, smallholder farmers, and household welfare in Kenya. *PLoS ONE*, 9(10), e109804.
- Mbiti, I., & Weil, D. N. (2011). Mobile banking: The impact of M-Pesa in Kenya. *National Bureau of Economic Research Working Paper Series*, 17129.

Munyegera, G. K., & Matsumoto, T. (2016). Mobile money, remittances, and household welfare: Panel evidence from rural Uganda. *World Development*, 79, 127-137.

Ndiwalana, A., Morawczyski, O., & Popov, O. (2010). Mobile Money Use in Uganda: A Preliminary Study. Mobile Money for the Unbanked. *Consultative Group to Assist the Poor (CGAP)*.

Schumpeter, J. A. (1911). The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle. *Harvard University Press*.

Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, 354(6317), 1288-1292.

USAID. (2018). Digital Financial Services: USAID's Vision for Action. *United States Agency for International Development*.

World Bank. (2019). The Global Findex Database 2019: Financial Inclusion Insights for the Middle East and Africa. *The World Bank*.

World Bank. (2022). Digital Financial Services: The Role of Financial Literacy and Education in Uganda. *The World Bank*.

APPENDIX

	Year	Numberofmo~o	Valueofmob~n	Outstandin~o	D1Numberof~o	D2Numberof~o	D3Numberof~o
1	2009	2836186	132575.21	3608.28	.	.	.
2	2010	28815741	962729.51	1670.51	2.60e+07	.	.
3	2011	87480931	3752955.1	43808.57	5.87e+07	3.27e+07	.
4	2012	2.417e+08	11662776	71959.37	1.54e+08	9.56e+07	6.29e+07
5	2013	3.995e+08	18645660	151243.59	1.58e+08	3486922	-9.21e+07
6	2014	4.963e+08	24053902	219178.98	9.68e+07	-6.09e+07	-6.44e+07
7	2015	6.936e+08	32737910	325293.05	1.97e+08	1.00e+08	1.61e+08
8	2016	9.747e+08	43828405	353733.47	2.81e+08	8.39e+07	-1.66e+07
9	2017	1.086e+09	56518191	468437.05	1.11e+08	-1.70e+08	-2.54e+08
10	2018	1.879e+09	71400748	338207.23	7.93e+08	6.81e+08	8.51e+08
11	2019	2.841e+09	73091852	417593.73	9.62e+08	1.70e+08	-5.12e+08
12	2020	3.527e+09	93728612	571361.59	6.86e+08	-2.76e+08	-4.46e+08
13	2021	4.291e+09	1.389e+08	628972.57	7.64e+08	7.78e+07	3.54e+08
14	2022	5.184e+09	1.656e+08	1366173	8.93e+08	1.29e+08	5.12e+07

D1Valueofm~n	D2Valueofm~n	D3Valueofm~n	D1Outstand~o	D2Outstand~o	D3Outstand~o
.
830154.3	.	.	-1937.77	.	.
2790226	1960071	.	42138.06	44075.83	.
7909821	5119595	3159524	28150.8	-13987.26	-58063.09
6982885	-926935.6	-6046531	79284.22	51133.42	65120.68
5408242	-1574643	-647707.8	67935.39	-11348.83	-62482.25
8684008	3275767	4850410	106114.1	38178.68	49527.51
1.11e+07	2406486	-869280.9	28440.42	-77673.65	-115852.3
1.27e+07	1599292	-807193.8	114703.6	86263.16	163936.8
1.49e+07	2192770	593478.1	-130229.8	-244933.4	-331196.6
1691104	-1.32e+07	-1.54e+07	79386.5	209616.3	454549.7
2.06e+07	1.89e+07	3.21e+07	153767.9	74381.36	-135235
4.52e+07	2.46e+07	5609725	57610.98	-96156.88	-170538.2
2.67e+07	-1.85e+07	-4.31e+07	737200.4	679589.4	775746.3