

# **MOBILE MONEY USAGE AND HOUSEHOLD FINANCIAL RESILIENCE IN UGANDA**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILLMENT  
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**UGANDA CHRISTIAN  
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## DECLARATION

I **Kamusiime Shinah.T**, hereby declare that this research report titled “Mobile Money Usage and Household Financial Resilience in Uganda” is my original work and has not been submitted to any university or higher institution of learning for an academic award.

I further affirm that all the sources of information used in this study have been duly acknowledged and referenced in accordance with academic standards. The study is based entirely on secondary data from the finscope Uganda 2023 Survey, and any assistance received during the research has been fully recognized

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## APPROVAL

This dissertation titled "Mobile Money Usage and Household Financial Resilience in Uganda" has been submitted for examination with the approval of my supervisor.

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Date: Tuesday, 14 April 2026

## ABSTRACT

This research study analyses the significant relationship of mobile money usage and household financial resilience in Uganda. There are combined factors are enhanced and influenced as a combination of factors, including financial inclusion, economic stability, and the ability to manage expenses effectively. Addressing these factors can help households in Uganda build a stronger financial foundation and improve their overall financial well-being.

Financial wellbeing is measured in terms of cash flow management (income) and quality of life (or quality standard of living through parameters such as investment, liquidity, expenses and debt management (Setiyani & Solichatun, 2019). Therefore, the concepts of the study are derived from consumer theory and theory of reason action. The latest studies have shown that financial wellbeing is fundamental for the improvement of the quality of life both in urban and rural areas, (Brüggen et al., 2017a) as evidenced by the way people live in Asia, USA and Europe globally which can be characterized by finances to promote better welfare of households in Uganda. Financial wellbeing is important because it helps to improve individual's livelihood in a community or society.

Financial wellbeing can help one to make a choice to finance his/her current and future obligations. Financial well-being is the foundation on which so many other aspects of a family's life are built as stipulated by international and national initiatives such as Sustainable Development Goals, (2030), National Development Plan III and Uganda Vision 2040. More so, Sukumaran (2021) noted that it also helps to improve the confidence, sentiment and knowledge that enable people to take better decisions in their lives. Financial Well-being has positive implications on educational achievement, contributes to better health outcomes and builds a stronger community for all nations worldwide (Mokhtar, 2019).

Mobile money in Uganda has become a cornerstone of *financial inclusion*. The Uganda mobile money market size was valued at USD 167.3 Billion in 2025. Looking forward, IMARC Group estimates the market to reach USD 1,289.1 Billion by 2034, exhibiting a CAGR of 24.71%. With Finscope Overall, 23.1% of Ugandan adults reported any mobile money usage (95% CI: 21.1% – 25.2%). This means about one in four adults used mobile money for transactions. The surge in mobile phone ownership and internet connectivity represents one of the pivotal Uganda mobile money market trends. In a country where traditional banking infrastructure is often limited, especially in rural and remote areas, mobile money platforms provide a practical and scalable solution for financial inclusion.

As of early 2024, Uganda reported 13.3 million internet users, equating to a 27% internet penetration rate. This growing digital access is enabling more Ugandans to engage with financial services that were previously out of reach. Mobile money facilitates a wide range of functions including peer-to-peer transfers, bill payments, merchant transactions, and cross-border remittances all through mobile phones. The simplicity, affordability, and security of these platforms are particularly appealing to the unbanked population. Moreover, as mobile applications become more sophisticated and user-friendly, adoption continues to rise across demographics, making mobile money a cornerstone of Uganda's evolving digital economy.

The financial resilience of households in Uganda is influenced by various factors, including access to financial products and services, usage, quality and welfare

## **DEDICATION**

I dedicate this work to my parents for the enormous sacrifices they have made without complaint, support, prayers and stability they have given me even when they were uncertain and above all for believing in me even when the road felt long. And for teaching me that all good things come with a price and sacrifice.

To my supervisor Mr. Mukisa Simon Peter, for the patience you have had with me, honest feedback and the willingness to walk with me from the first stage of topic selection till the conclusion of my study. I am deeply grateful

To myself, I thank myself for not giving up on this piece of work, for pushing through the doubts and keeping my resilience, zeal and determination till the last chapter. This took discipline I didn't know.

Above all God at the center of this journey, for the strength, faith and clarity during the challenging situation, lastly for His grace that did not let me quit. This dissertation is a small proof of their love labor and His faithfulness.

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## Table of Contents

DECLARATION .....	I
APPROVAL .....	II
ABSTRACT .....	III
DEDICATION .....	V
ACKNOWLEDGEMENT .....	VI
LIST OF FIGURES .....	X
LIST OF TABLES .....	X
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1 INTRODUCTION.....	1
1.2 BACKGROUND OF THE STUDY.....	1
1.3 STATEMENT OF THE PROBLEM.....	2
1.4 PURPOSE OF THE STUDY.....	4
1.5 RESEARCH OBJECTIVES .....	4
1.6 RESEARCH QUESTIONS .....	4
1.7 SCOPE OF THE STUDY .....	5
1.7.1 TIME SCOPE.....	5
1.7.2 SUBJECT SCOPE .....	5
1.8 SIGNIFICANCE .....	6
1.9 CONCEPTUAL FRAMEWORK.....	7
CHAPTER TWO.....	9
LITERATURE REVIEW .....	9
2.1 INTRODUCTION.....	9
2.2 THEORETICAL REVIEW .....	9
2.3 EMPIRICAL REVIEW.....	10
2.3.1 SIGNIFICANCE OF MOBILE MONEY REMITTANCES ON FINANCIAL RESILIENCE.....	10
2.3.2 EFFECTS OF FINANCIAL INCLUSION .....	11
2.3.3 INFLUENCE OF MOBILE MONEY SAVING AND BORROWING SERVICES ON FINANCIAL RESILIENCE .....	11
2.4 RESEARCH GAP.....	12
CHAPTER THREE .....	13
METHODOLOGY .....	13
3.1 INTRODUCTION.....	13

3.2 VARIABLE DEFINITION .....	13
3.3 SOURCES OF DATA .....	14
3.4 DATA ANALYSIS .....	14
3.5 MODEL SPECIFICATION .....	15
MODEL 2: HETEROGENEITY INTERACTION MODEL .....	16
EQUATION 2: HETEROGENEITY INTERACTION MODEL .....	16
3.6 ESTIMATION TECHNIQUES .....	16
3.6.1 DESCRIPTIVE ANALYSIS .....	16
3.6.2 CORRELATION ANALYSIS .....	17
3.6.3 DIAGNOSTIC TESTS .....	17
3.6.3.1 MULTICOLLINEARITY TEST .....	17
3.6.3.3 GOODNESS OF FIT TEST (LOGISTIC MODEL) .....	17
3.6.3.3 CLASSIFICATION ACCURACY .....	17
3.7 DATA PROCESSING, AND MANAGEMENT .....	17
3.8 ETHICAL CONSIDERATIONS .....	18
CHAPTER FOUR .....	19
PRESENTATION OF DATA, ANALYSIS AND INTERPRETATION .....	19
4.1 INTRODUCTION .....	19
TABLE 4.1: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS .....	19
4.2 ASPECTS OF MOBILE MONEY USAGE AMONG HOUSEHOLDS IN UGANDA .....	20
4.2.1.1 INTENSITY OF MOBILE MONEY TRANSACTIONS .....	21
TABLE 4.3: TRANSACTION FREQUENCY AMONG USERS .....	21
4.2.2 MOBILE MONEY SAVING AND BORROWING .....	22
TABLE 4.4: MOBILE SAVING AND BORROWING USAGE .....	22
4.2.3 REMITTANCES USING MOBILE MONEY SERVICES .....	22
4.3 HOUSEHOLD FINANCIAL RESILIENCE AMONG UGANDAN HOUSEHOLDS .....	23
4.4 CORRELATION BETWEEN MOBILE MONEY AND HOUSEHOLD FINANCIAL RESILIENCE .....	24
4.4.1 CORRELATION ANALYSIS .....	25
4.4.2 REGRESSION ANALYSIS .....	26
TABLE 4.10: LOGISTIC REGRESSION WITH INTERACTIONS (SELECTED SIGNIFICANT INTERACTIONS) .....	28
4.5 SUBGROUP ANALYSIS BY RESIDENCE .....	29
TABLE 4.11: SUBGROUP REGRESSIONS BY RESIDENCE .....	29
4.6 SUMMARY OF FINDINGS .....	30
4.7 DISCUSSION OF FINDINGS .....	30
4.8 CHAPTER CONCLUSION .....	31
CHAPTER FIVE .....	32
SUMMARY, CONCLUSION AND RECOMMENDATION .....	32

5.1 INTRODUCTION.....	32
5.2 SUMMARY OF FINDINGS .....	32
THE RESEARCH HAD THREE OBJECTIVES TO DIRECT THE STUDY AND THE MAIN FINDINGS ARE AS FOLLOWS.....	32
5.2.1. INFLUENCE OF MOBILE MONEY TRANSFER ON FINANCIAL RESILIENCE.....	32
5.2.2. THE EFFECT OF MOBILE MONEY SAVING AND BORROWING SERVICES ON FINANCIAL RESILIENCE. ....	33
5.2.3. THE IMPACT OF MOBILE MONEY REMITTANCES ON FINANCIAL RESILIENCE. ....	33
5.2.4 HETEROGENEITY: BY RESIDENCE AND REGION. ....	33
5.3 CONCLUSIONS .....	34
5.4 RECOMMENDATIONS .....	35
5.4.2 MOBILE MONEY OPERATOR (MTN MOBILE MONEY, AIRTEL MONEY).....	36
5.4.3 DEVELOPMENT PARTNER AND NGO RECOMMENDATIONS (FSD UGANDA, GSMA, UNDP) .....	37
5.4.4 RECOMMENDATIONS FOR HOUSEHOLDS AND COMMUNITIES .....	37
5.5 STUDY LIMITATIONS.....	37
5.6 FUTURE RESEARCH AREAS. ....	38
5.7 CONCLUSION.....	40
REFERENCES .....	41

## LIST OF FIGURES

Figure 1: Conceptual framework.....	10
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## LIST OF TABLES

Table 4.1 Demographic Characteristics of respondents.....	21
Table 4.2 Mobile Money Transfer Usage.....	23
Table 4.3 Transactions Frequency Among Users.....	23
Table 4.4 Mobile Saving and Borrowing Usage.....	24
Table 4.5 Remittance Usage.....	24
Table 4.6 Financial Remittance Categories.....	25
Table 4.7 Shock Burden Score Statistics.....	25
Table 4.8 Correlation Results.....	27
Table 4.9 Logistic Regression Results (Baseline Model).....	28
Table 4.10 Model Summary – Logistic Regression for Household Financial Resilience (Selected Significant Interaction).....	29
Table 4.11 Subgroup Regression by Residence.....	30
Table 4.9 Logistic Regression Results (Baseline Model).....	28

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Introduction**

This chapter introduces the study on Mobile Money Usage and Household Financial Resilience in Uganda. It represents the background of the study, statement of the problem, objectives, research questions, scope, justification, significance, and the conceptual framework.

#### **1.2 Background of the Study**

The definition of financial resilience may be simply stated as the capacity of a human being to operate in adverse financial situations (Salignac et al, 2019). At the international level, financial engagement through the spread of digital financial services has been identified as a potential driver for building resilience in various countries of the world where such facilities are limited. In the region of Sub-Saharan countries, mobile money has been recognized as a revolutionary technology with the capacity to change the way individuals conduct financial transactions in the region. In other countries such as Uganda in the low-income group of the world, economic crises characterize the lives of individuals as they struggle to pay household bills due to the unsteadiness of their income levels, the need for dependents to be fed, limited access to other options for funds such as credit facilities, and the rise in the cost of living (GSMA, 2023).

Thus, in Uganda, mobile money has radically reshaped the landscape of financial inclusion. According to the finscope Uganda 2023 survey, formal financial inclusion grew by 10 percentage points since 2018, mainly due to mobile money, used currently by 65.9% of the adult population. On the other hand, this technological adoption coexists with a grim reality of broad financial vulnerability. To indicate that despite such growth in mobile money uptake, Ugandan households remain fragile financially, an overwhelming proportion of Ugandan adults-90%-faced an unexpected expense in 2023, and 70% reported that their income was insufficient to cover their monthly expenses. Financial wellbeing is measured in terms of cash flow management (income) and quality of life (or quality standard of living through parameters such as investment, liquidity, expenses and debt management (Setiyani & Solichatun, 2019). Therefore, the concepts of the study are derived from

consumer theory and theory of reason action. The latest studies have shown that financial wellbeing is fundamental for the improvement of the quality of life

both in urban and rural areas, (Brüggen et al., 2017a) as evidenced by the way people live in Asia, USA and Europe globally which can be characterized by finances to promote better welfare of households in Uganda. Financial wellbeing is important because it helps to improve individual's livelihood in a community or society. Therefore, this juxtaposition of high levels of digital finance development and significant financial fragility offers a crucial site of research and policy investigation, which essentially frames the background to this research work. In the end, it succeeds in posing essential research questions like: Does the use of mobile money indeed build financial resilience? Or rather, does the usage of mobile money simply facilitate short-term financial transactions while failing to build any form of long-term financial resilience? While there are existing national reports on the trends of usage, there has been no in depth investigation of its relation to financial resilience with nationally representative datasets like the finscope Uganda 2023.

This research will seek to utilize the finscope 2023 dataset as a foundational gateway through which to conduct a critical intersectional analysis of financial inclusion in Uganda. With the importance of mobile money to financial systems in Uganda and the difficulties that are being experienced, it is imperative to have a deeper understanding of various impacts, not just about utilization, but through critically engaging with recent discourses in disability studies, post-conflict development studies, and financial geography, to offer a finer subtlety to addressing financial inclusion

### **1.3 Statement of the Problem**

Ideally, the increased access to digital financial services, especially mobile money, should translate into the better capacity of households to enhance their economic resilience through encouraging safe savings, improving access to funds in case of emergencies, allowing timely remittances, and reducing negative coping mechanisms

During economic shock. In a household that is financially resilient, unexpected expenditures should be manageable through accrued savings, risk-mitigation strategies, or faster access to affordable digital financial services.

However, the challenge being addressed is that at the same time, widespread usage of mobile money in Uganda has failed to result in increases in household financial resilience. According to Finscope Uganda 2023, despite a dramatic increase in the number of adults using mobile money

services to 64% in 2023 from 2018, as many as 94% still received unexpected financial shocks in 2023, with many reporting problems in covering such emergency expenses. This indicates a large gap between the growth in digital financial inclusion and actual improvements in household financial resilience.

In addition, mobile money has improved the convenience and efficiency of payments, remittance services, and financial access in numerous countries on the African continent, according to Suri (2021) and Batista and Vicente (2020). Jimmy Ebong (2017) also points out that mobile money is also the dominant financial service, with the percentage of registered mobile money accounts rising from 35% in 2015 to 38% in 2016. Almost everyone who is connected has access to digital financial services. Mobile money access continued to rise throughout 2016 owing to an increase in mobile money agents, who are men, women, and youths. However, most of them are women. There is new evidence that having a registered mobile money account boosts the chances of holding some savings. Moreover, mobile money has the potential for supporting households' consumption smoothing and shock response in small-scale risks, particularly in East Africa, according to Kikulwe et al. (2022). However, this pervasiveness of digital financial services extends to the rising concern related to a growing financial vulnerability. In such an instance, Uganda provides a compelling case for further in- depth analysis in the aim of illuminating the question based on specific usage patterns. Indeed, mobile money is generally utilized in the context of remittance transfers and acceptances for 90%, thus suggesting its main application as a channel for the delivery of financial services in Uganda (finscope Uganda, 2023, p. 58). Nevertheless, the question of long-term resilience is limited. Indeed, the channel represents a major tool

For economic savings at the same time, the majority of the users immediately deploy the funds for consumption.

So far, there has been an uninterrupted drive by countries to improve infrastructure for mobile money, digital literacy, and promoting financial inclusion through

Regulatory measures and mobile money savings products. Likewise, other countries have been impacted by research findings on the effects of mobile money on income

Stability and household accounting on various financial aspects. Similarly, finscope works monitor patterns, non-adoption, user experiences, and shocks.

What is, however, not known and remains a major research gap is whether increased mobile money usage actually translates into measurable household financial resilience in Uganda, especially using nationally representative data. Existing national reports describe usage trends but do not empirically link mobile money usage to resilience indicators such as emergency savings capacity, shock absorption, coping mechanisms, and the ability to meet unexpected expenses. There is also limited evidence on which demographic and socio-economic factors influence this relationship in the Ugandan context.

Therefore, it will be important to undertake an empirical study that adopts the finscope Uganda 2023 dataset for quantitative analysis of the link between mobile money use and financial resilience at the household level, the degree to which these digital financial services contribute toward resilience, and the socioeconomic factors influencing the relationship. This evidence is quite critical in the design of policies and interventions that go beyond mere access to ensure that digital financial inclusion translates into real improvements in household financial stability.

#### **1.4 Purpose of the Study**

The purpose of this study is to examine whether the usage of mobile money contributes to improved financial resilience of households in Uganda

#### **1.5 Research Objectives**

- I. To examine the effect of mobile money transactions on financial influence in Uganda
- II. To assess the influence of mobile moneysaving and borrowing services on financial resilience in Uganda.
- III. To examine the effect of mobile money remittances on financial resilience in Uganda.

#### **1.6 Research Questions**

- I. What is the level of significance being mobile money usage among households in Uganda?
- II. What is the influence of financial resilience among households with its combined factors in Uganda?
- III. To what extent does the use of specific mobile money services contribute to a household's in financial resilience?

## **1.7 Scope of the Study**

This section defines the boundaries of the research by outlining its content, geographical focus. This clarity ensures the study remains focused, feasible, and analytically sound. This study is nationwide covering all regions Uganda has made substantial progress in enhancing financial inclusion and improving the financial well-being of its citizens. The enlargement of digital financial services and improvements in economic indicators underscore this progress.

The study is a national-level analysis. This is because the scope of the study is the whole country. The study used the International Digital Organization for Scientific Research and finscope Uganda 2023 to 2025 dataset. This dataset includes adults from the entire country. In terms of geographical distribution, the study's scope was the entire country. As such, the study covered the Central region, Eastern region, Northern region, and the Western region. Uganda has, an average, of the highest adoption of mobile money services that have rapidly evolved in the country over the last decade.

The growing use of mobile phones has boosted the uptake of mobile money services, particularly in rural areas where access to banking services is limited. People of all categories in Uganda have widely adopted the convenient use of mobile money. Mobile Money has greatly enhanced financial innovation in Uganda, extending social services, particularly banking products, to those who are unable to obtain bank accounts.

### **1.7.1 Time Scope**

The study is based entirely on the finscope Uganda 2023/2025 survey, existing literature on financial well-being by indicating that only usage, accessibility, and affordability significantly affect the economic well-being of households in urban Uganda. This makes this information more relevant to today.

### **1.7.2 Subject Scope**

This study aims to examine the relationship between mobile money usage and household financial resilience in Uganda, with mobile money usage as the independent variable and household financial resilience as the dependent variable. The study indicates that researchers, policymakers, and advocates

of financial inclusion should reconsider investigating the individual contributions of the different components of financial inclusion in promoting the financial well-being of households in urban Uganda. This study combines all the components (usage, accessibility, and affordability) measures of financial inclusion to explain the financial well-being of households in urban Uganda.

This study will help eliminate the widening gap of knowledge on the utility of mobile money services in Uganda, considering that the majority of people face monetary shocks despite the wide use of mobile money services in the country, whereas past studies were concerned only with the extent of financial inclusiveness rather than the actual effect of this use on monetary stability. Therefore, this study will help provide the necessary evidence to help alleviate the problem of household vulnerability in Uganda through the application of appropriate monetary policies and techniques to implement the same.

This kind of research holds the key to emerging beyond correlation and gaining valuable insights into strategies for leveraging the power of mobile money in creating financial security for individuals across various sections of Ugandan society. These findings would provide policymakers with the much-needed evidence for developing policies and products, creating a transition from digital connectivity to economic security

### **1.8 Significance**

This study on "Mobile Money Usage and Household Financial Resilience in Uganda" is highly significant for various stakeholders. Significantly, this research provides insights and recommendations, which are essential for the development of policy, strengthening of financial services, and deepening of academic knowledge on digital financial services and household welfare. This scholarly work has great importance for the ongoing national endeavors for building economic stability for the country through digital financial systems.

For policymakers in both the national and local governments of Uganda, the study provides important information, which can be used for more informed decision-making in the development of more effective financial inclusion strategies. This is because, through the study, the government can be able to appreciate the positive role mobile financial services play in the development of resilience in the lives of Ugandans, thereby ensuring the economic stability of the people through digital financial inclusion.

This study would be of great importance to the household sector, whereby one would be able to gain a deeper understanding of the impacts of the usage of mobile money on the financial well-being of the

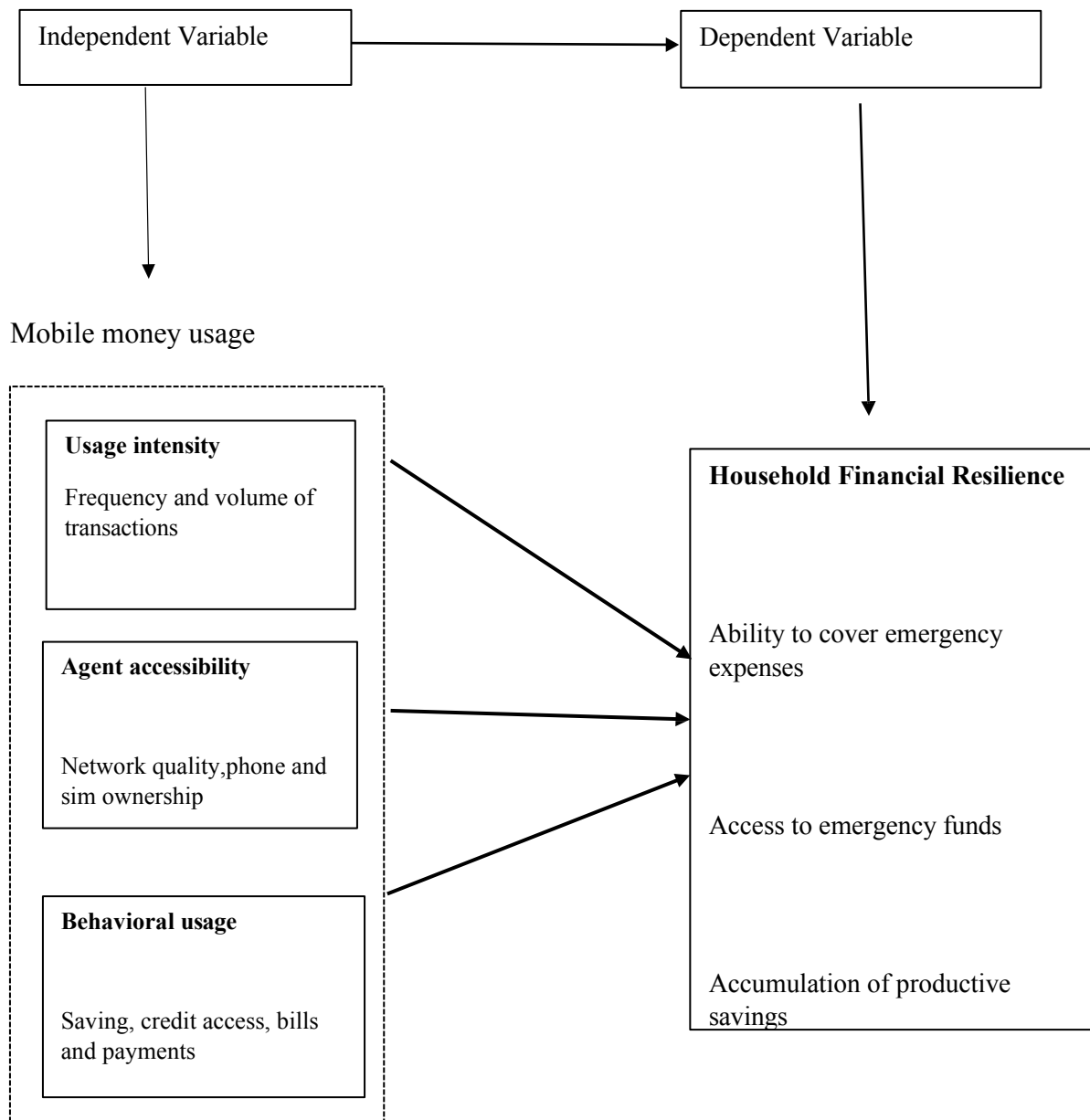
household sector. For instance, through the insights gained from the finscope Uganda 2023 survey findings, the importance of using mobile money strategically can be understood and explained, helping the household sector make informed decisions towards reducing their vulnerability and enhancing their financial preparedness towards a more financially stable position.

Moreover, the study is beneficial to fellow scholars and the academic fraternity at large. The study adds to the pool of existing information on digital financial inclusion and household resilience. It also proves that secondary studies carried out with nationally representative samples, such as the finscope Uganda 2023 survey, are beneficial and worthwhile. The study is also beneficial as a guide for other scholars undertaking studies concerning finance, development studies, and economics. Thirdly, the study recognizes gaps that have not been covered by studies undertaken so far, Hence encouraging further studies on the long-term impacts of mobile money use on household welfare and resilience.

### **1.9 Conceptual Framework**

The conceptual model depicts the relationship between the usage of mobile money services (independent variable) and household financial resilience (dependent variable). Mobile money services are anchored in dimensions such as usage intensity, accessibility of agents, and usage behaviors, which cover savings, credit, bills, and payments. These will affect household financial resilience, which is considered in terms of meeting out-of-pocket necessities, drawing on emergency funds, and building productive savings.

This framework is based on a theoretical foundation: financial inclusion theory, which argues that resilience is bolstered by digital tools such as mobile money because they lower transactional costs, enhance remittances, and allow for savings during shock episodes (Jack & Suri, 2014). This theoretical foundation is based on the idea that increased engagement with mobile money is positively associated with resilience, underpinned by dimensions such as demographics and location. The framework shapes the empirical analysis by drawing attention to crucial channels via which mobile money would bridge the divide between financial access and resilience.



*Figure 1: Conceptual framework*

Having outlined the introduction, problem statement, objectives, and conceptual framework of the study, the next chapter reviews the existing literature on mobile money usage and household financial resilience to provide theoretical and empirical context for the analysis

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents a review of literature related to mobile money usage and household financial resilience. It provides a foundation for the study by examining existing theories, concepts, and empirical findings. The chapter is organized into four main sections, namely the theoretical review, conceptual review, empirical review, and the research gap.

#### **2.2 Theoretical Review**

This study is guided by the Financial Inclusion Theory, which emphasizes the importance of access to financial services in improving economic well-being. According to this theory, individuals and households that have access to affordable and reliable financial services are better able to manage risks, smooth consumption, and plan for future financial needs (Demirgüç-Kunt et al., 2018).

In developing countries, financial inclusion has increasingly been driven by digital financial services such as mobile money. These services reduce barriers associated with traditional banking, including high transaction costs, long distances, and strict account requirements (GSMA, 2023). As a result, mobile money has become a key tool for extending financial services to underserved populations.

From a theoretical perspective, access to mobile money is expected to enhance financial resilience through improved liquidity, easier access to savings, and better risk-sharing mechanisms. For example, mobile money enables faster and more secure financial transfers, which can be critical during times of economic stress.

However, some scholars argue that access alone does not guarantee improved financial outcomes. The benefits of financial inclusion depend on how financial services are used. In many cases, individuals may have access to mobile money but use it only for basic transactions rather than for savings or investment (Suri & Jack, 2016). This suggests that the impact of mobile money on financial resilience depends largely on usage patterns.

## **2.3 Empirical Review**

Empirical studies on mobile money and financial resilience provide mixed findings. For the case of Financial Well-Being, Uganda's economy has demonstrated resilience in Economic Growth with growth estimated to reach 6.0% in the fiscal year 2024, up from 5.3% in the previous fiscal year. This growth is attributed to favourable agricultural production and robust industrial and services activity. Human Development Index (HDI) played a vital role in that between 1990 and 2023, Uganda's HDI value improved from 0.329 to 0.550, marking a major improvement in the population's well-being.

In Kenya, Jack and Suri (2014) found that mobile money significantly improved households' ability to cope with income shocks. Households with access to mobile money were able to maintain consumption levels during economic shocks by receiving remittances from their social networks.

In Uganda, Munyegera and Matsumoto (2016) found that mobile money had a positive effect on household welfare, particularly in terms of consumption and financial access. However, recent findings from finscope Uganda (2023) indicate that despite widespread use of mobile money, many households remain financially vulnerable. A large proportion of the population continues to face unexpected expenses and struggles to meet basic needs. Uganda has made substantial progress in enhancing financial inclusion and improving the financial well-being of its citizens.

### **2.3.1 Significance Of Mobile Money Remittances On Financial Resilience**

Mobile money has been shown to significantly increase the likelihood of saving, borrowing, and receiving remittances among households. The reduction in transaction costs associated with mobile money usage is a key factor in this increase. Households using mobile money are 25% more likely to save, 22% more likely to borrow, and 82% more likely to receive remittances compared to non users. The distance to mobile money agents significantly affects financial service usage, with each kilometer reducing service likelihood by 8%. This suggests that enhancing access to and usage of pro-poor financial products could be a first step to achieving greater financial inclusion.

This suggests that while mobile money plays an important role in facilitating financial transactions, it may not automatically lead to improved financial resilience. Factors such as financial literacy, income levels, and usage patterns influence outcomes.

### **2.3.2 Effects of financial inclusion**

Recent studies have shown that over 70% of Ugandans own a mobile phone, with a lower penetration in rural areas (around 65%). This study however focuses on rural Northern Uganda, which is more underserved, with only 27.6% of households possessing a mobile phone. In addition, MTN is the most popular service provider where it has almost become a monopoly, especially in rural areas. This is why, in the framework of the program studied, IFC collaborated with Airtel Money: to increase competition (meaning lower prices), and to increase the penetration of mobile money in rural communities. The areas included in the study have “high poverty rates, as well as low access to financial services, with a median distance to a bank branch being 25.2 km.” The study aims to analyze whether introducing mobile money agents can affect accessibility and the households’ financial behavior and to understand if these areas are simply “too remote and too poor to benefit from mobile money, or if mobile money would increase savings and remittance receipts’ World Bank, 2019.

### **2.3.3 Influence of mobile money saving and borrowing services on financial resilience**

Financial inclusion is measured by access to basic products and services, usage, quality and welfare (Bongomin et al., 2016; Okello et al, 2017). Financial inclusion is very important in improving the household’s financial wellbeing (Okello et al., 2019). However, despite the availability of finances from financial institutions, households’ financial well-being has remained low (UBOS, 2021). Additionally, previous scholars such as World Bank (2021), World Bank (2020), Bongomin et al., (2017), Bongomin et al., (2019), Okello et al., (2020), Bongomin et al., (2020) have used access, usage, quality and welfare as measures of financial inclusion while explaining financial wellbeing. However, these studies ignore the use of affordability and accessibility of financial inclusion. Therefore, in this study we applied accessibility and affordability as part of the measures of financial inclusion (FI). Furthermore, policy makers should note that financial inclusion alone may not promote financial wellbeing among rich and poor households in urban Uganda. Therefore, there is need to design and implement future financial education programmes, which abide more on behavioral change in order for access, usage, accessibility and affordability to be accurately utilized by households. Alliance for Financial Inclusion (2021) defines financial inclusion as “a state in which all people who can use and have access to full suite of quality financial services provided at affordable prices, in a convenient manner, and with dignity for the customer” (Info et al., 2021). Furthermore, the World Bank (2021) defines financial inclusion as having “access to a transaction account or an electronic instrument to store money, send payments and receive deposits.”

## **2.4 Research Gap**

Although there is extensive literature on financial inclusion and mobile money, several gaps remain.

First, many studies focus on access to mobile money rather than actual usage. This limits understanding of how different usage patterns affect financial resilience.

Second, there is limited use of comprehensive measures of financial resilience. Many studies rely on single indicators rather than capturing the multidimensional nature of resilience.

Third, there is limited empirical analysis using nationally representative data in Uganda. This reduces the generalizability of findings.

This study addresses these gaps by using finscope Uganda 2023 data to examine the relationship between mobile money usage and household financial resilience using measurable indicators and statistical analysis.

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

This chapter explains the methodological design of the analysis as to whether the use of mobile money leads to financial resilience in households of adults in Uganda through the secondary data of the survey by Finscope Uganda 2023. It discusses the essential variables, data source, data preparation, and outlines the statistical analysis such as descriptive, econometric models, model specifications, variable transformation, and diagnostic tests.

#### 3.2 Variable Definition

The key dependent variable of interest is household financial resilience which was sourced in the Finscope Uganda 2023 survey. The resilience to financial crises was measured in the study through the composite score of shock burden, which is a combination of the frequency and intensity of unexpected financial shocks household received (ex: a health emergency, crop failure, theft, price shocks) and how it bounced back. The study log transformed the resilience measure where this was the case, as shock burden data are often right skewed due to certain households having a number of severe shocks, to stabilize the variance and reduce the impact of outliers.

The three dimensions of mobile money usage were the explanatory variables and were obtained using structured Finscope questionnaire. Three constructs were used to measure mobile money usage including, mobile money transaction intensity (frequency and volume of person to person transfers, payment of bills and merchant payments), saving and borrowing mobile money behaviour (use of mobile wallets to save and mobile based credit products) and mobile money remittance activity (sending and receiving domestic or cross border remittances). These will allow the study to establish whether mobile money use promotes household financial resilience to stay strong once households encounter income or expenditure shocks.

The mobile money variables were determined by using the questions related to the Finscope Uganda 2023 survey and implemented as the primary aspect of financial resilience. The intensity of transaction involves the rate of mobile money transfer, bill payments and merchant transactions. Mobile money Saving and borrowing has intentional saving using mobile money, membership in mobile linked savings groups, access to mobile credit (e.g. MTN MoKash, Airtel Quickloan).

Remittance activity involves sending or receipt of money using mobile platforms. To use these indicators in the present study, they are utilized to establish households that may have different degrees of digital financial interaction that would impede or disrupt typical resilience dynamics.

Demographic and socioeconomic factors are used as control variables: the gender and the age group and the level of education and the place of residence (rural/urban) and the area where the respondent was living. By including them, it can make sure that any mobile money resilience relationship discovered is real and based not on composition or geographic variety.

### **3.3 Sources of Data**

Secondary data from the Finscope Uganda 2023 survey were used in the study. The survey was carried out by the Ugandan adults, 16 years old and older who represent all its four geographic regions (Central, Eastern, Northern, Western) and both urban and rural regions. The questionnaire included detailed answers related to the mobile money use, financial shocks, savings, credit, remittances, and household demographics. The research utilized merged dataset of all corresponding sections (mobile money, shocks, savings, credit, and biodata).

All the sections were brought together using unique respondent ID. All sections were checked before analysis and all the variables were checked to have similar variable names, code and missing data were properly treated. After finishing them, the combined data were purged, mended to lack consistency, and categories re-coded and continuous variables log-transformed where appropriate in order to enhance the model.

### **3.4 Data Analysis**

Quantitative methods were used in order to analyze the relationship between mobile money usage and financial resiliency of the household. The initial action has yielded descriptive statistics to describe significant attributes of resilience levels, the patterns of mobile money use, and socioeconomic characteristics using measures of central tendency (mean, median), and dispersion measures (standard deviation, range) to show the distribution patterns.

Estimation of two distinct models that target two different parts of the resilience process was then performed. The first studied the influencing factors of financial resilience. The other analyzed how the dimensions of mobile money interacted with respondent factors (residence and region), which indicated whether mobile money increased resilience among various groups (urban vs. rural and by geographic region). The entire data management and econometric analysis were done in Stata.

### 3.5 Model Specification

Two econometric models outlined below were used to guide the empirical analysis.

#### Model 1: Main Effects Model (Logistic Regression)

The first one was used to establish the effect of the three dimensions of mobile money use on household financial resilience. As the main resiliency metric (high shock burden vs. low shock burden) is a dichotomous one, a logistic regression was estimated in the course of the study. The equation is:

#### Equation 1: Financial Resilience Model (Main Effects)

$$\ln(\pi_i / (1 - \pi_i)) = \beta_0 + \beta_1 \text{Transactions}_i + \beta_2 \text{SavingsBorrowing}_i + \beta_3 \text{Remittances}_i + \beta_4 \text{Gender}_i + \beta_5 \text{Age}_i + \beta_6 \text{Residence}_i + \beta_7 \text{Region}_i + \gamma_6 \text{Interaction6} + \gamma_7 \text{Interaction7} + \dots + \gamma_{11} \text{Interaction11} + u_i$$

*Where:*

- I.  $\ln(\pi_i / (1 - \pi_i))$  = log-odds of household  $i$  being financially resilient (i.e., low shock burden)
- II. Transactions = mobile money transaction intensity score
- III. Savings Borrowing = mobile saving and borrowing usage score
- IV. Remittances = mobile remittance activity score
- V. Gender, Age, Residence, Region = control variables
- VI.  $u_i$  = random error term

VII.  $\gamma_6$  to  $\gamma_{11}$  are the interaction coefficients

To estimate the model, survey-weighted logistic regression in Stata was used to account for the complex sampling design of Finscope Uganda 2023.

### **Model 2: Heterogeneity Interaction Model**

The second model specifically addressed the hypothesis that the effect of mobile money usage on financial resilience varies across respondent characteristics (residence and region). This model includes interaction terms between mobile money dimensions and these characteristics. The specification is:

#### **Equation 2: Heterogeneity Interaction Model**

$$\ln(1 - \pi_i) = \beta_0 + \beta_1(\text{Transactions}_i) + \beta_2(\text{SavingsBorrowing}_i) + \beta_3(\text{Remittances}_i) + \beta_4(\text{Gender}_i) + \beta_5(\text{Age}_i) + \beta_6(\text{Residence}_i) + \beta_7(\text{Region}_i) + u_i$$

*Where:*

- $\gamma_6$  to  $\gamma_{11}$  are the interaction coefficients
- $\epsilon_i$  is the error term

An statistically significant negative value of an interaction coefficient (resilience defined by low shock burden) would mean that mobile money helps resilience more in some groups (e.g., rural residents or a particular region) but a non significant would mean it does not have a difference effect.

### **3.6 Estimation Techniques**

#### **3.6.1 Descriptive Analysis**

The analysis started with the descriptive analysis aimed at giving the concise picture of the sample households. An overview of the levels of resilience, the trends in the use of mobile money, and socioeconomic data has been provided. The mean, median, standard deviation, minimum,

maximum and percentages were calculated in Stata. These descriptive findings are used to identify common trends in resilience, the frequency of mobile money use as well as demographic factors.

### **3.6.2 Correlation Analysis**

It was then supposed to conduct a correlation analysis to find out whether there is a direction and strength of correlation between the main variables, i.e. dimensions of mobile money usage and financial resilience outcomes. This enabled the study to: (i) find initial relationships to be used when supporting the conceptual framework and (ii) find relationships among variable clusters which would give information in specifications of the model. Correlation is however, not causation but it is a useful diagnostic tool that can be used to get acquainted with the data prior to econometric estimation.

### **3.6.3 Diagnostic Tests**

To test that the regression models meet the assumptions of the classical linear model (adapted to logistic regression), diagnostic tests were conducted.

#### **3.6.3.1 Multicollinearity Test**

To determine the presence of multicollinearity among the independent variables, the Variance Inflation Factor (VIF) was used. A high VIF implies that variables are highly related to others and may make coefficients to be biased. A typical level of VIF is 10. When VIF exceeds 10, an alternative model is considered, possibly by dropping or merging some predictors.

#### **3.6.3.3 Goodness of Fit Test (Logistic Model)**

Hosmer Lemeshow test was employed in order to test the suitability of the logistic model to the data. The non-significant p value ( $p > 0.05$ ) means that the model suits the data well, that is, there is no significant difference between the predicted and observed outcomes.

#### **3.6.3.3 Classification Accuracy**

To assess the predictive power of the logistic regression model, the percentage of the correctly predict outcomes (sensitivity, specificity, and overall correct classification) were computed.

## **3.7 Data Processing, and Management.**

The data of the Finscope Uganda 2023 survey were ready to be analyzed. The different facets (mobile money usage, shocks, savings, credit, remittances, demographics) were combined into one dataset. The data were imported into Stata where they underwent analysis and standardisation of the variables was done. The files were pooled with the use of different ID. Upon fusion, data was cleaned, filled in, discrepancies removed and new variables constructed.

The binary financial resilience indicator (1 = low shock burden/resilient, 0 = high shock burden/not resilient) was formed and the three scores of mobile money usage generated. The categories of control variables were gender, age group, residence, and region. Outlier identification and consistency checks were done. Lastly, the cleaned dataset was stored and a do file was created to be able to reproduce all the steps.

### **3.8 Ethical Considerations**

Data sources at this study are second hand data as gathered by the Finscope Uganda 2023 with the informed consent of the adult respondents; hence, there was no direct harm posed to the respondents. The respondents were not coerced to participate and it was all voluntary. The data were stored safely and exclusively analyzed and used academically. Results are represented in the aggregate format that the individuals can not be identified. The research was done effectively with good citation, openness and without bias.

## CHAPTER FOUR

### PRESENTATION OF DATA, ANALYSIS AND INTERPRETATION.

#### 4.1 Introduction

The chapter is based on the Finscope Uganda 2023 survey of 3,176 adults conducted to measure the aspects of mobile money usage, calculate the level of household financial resilience, and analyze them. The analysis was conducted with logistic regressions that included the interaction terms with residence and region in Stata and met the diagnostic criteria (multicollinearity, goodness of fit) and was done using the survey weights to be representative nationally.

In detail, the descriptive statistics of the respondents is given.

This section will outline the background features of the 3,176 respondents that took part in the Finscope Uganda 2023 survey. The demographic profile of the sample is also important as one must be aware that their variables (age, gender, residence, and region) are known to affect both mobile money use and financial resilience at home.

**Table 4.1: Demographic Characteristics of Respondents**

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>	Male	1,524	48.0
	Female	1,652	52.0
<b>Age Group</b>	16–30 years	1,042	32.8
	31–45 years	1,118	35.2
	46–60 years	683	21.5
	60+ years	333	10.5
<b>Residence</b>	Rural	2,143	67.5
	Urban	1,033	32.5
<b>Region</b>	Central	1,016	32.0

Eastern	794	25.0
Northern	635	20.0
Western	731	23.0

*Source: Author's computations from Finscope Uganda 2023*

### **Interpretation**

The result, shown in Table 4.1, is that the survey population is slightly female dominated: 52.0 percent of the respondents are women and 48.0 percent are men. This balance matters since it enables meaningful comparisons of male and female adults in the further regression analysis, especially with the aim of studying heterogeneity.

Most of the respondents (35.2) were between 31 and 45 years old and this is the most economically active age group. It is an important period of financial stability as people in this cohort have the potential to earn more but also have high levels of family spending. Another 32.8% belonged to the 16 30-year-old age group, or the group of younger adults who might be less resilient because of less accumulation of assets. The lowest percentage (10.5) were people of 60 years and above.

With regard to place of abode, 67.5% of respondents resided in rural and 32.5% in urban areas which shows the rural population distribution in Uganda. In the region, the Central region's share was highest (32.0%), then the Eastern (25.0%), Western (23.0%) and Northern (20.0%). The pattern of resiliency studied through this distribution enables the investigation of the variation of resiliency patterns in geographic settings.

### **4.2 Aspects of mobile Money Usage among households in Uganda.**

The subtopics of this section will discuss Objective One: to investigate the impact of the mobile money transactions on Ugandan financial resilience, and Objective Two: to explore how the mobile money saving and borrowing services and remittances impact financial resilience. Three constructs were used to measure mobile money use: transaction intensity, saving and borrowing behaviour and remittance activity.

#### 4.2.1.1 Intensity of mobile money transactions.

Transaction intensity is the rate and amount of mobile money transfers, payment of bills and transactions with merchants.

**Table 4.2: Mobile Money Transaction Usage**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Uses mobile money for transactions</b>	2,950	92.9
<b>Does not use mobile money for transactions</b>	226	7.1
<b>Total</b>	<b>3,176</b>	<b>100</b>

*Source: Author's computations from Finscope Uganda 2023*

#### **Interpretation**

Table 4.2 reveals that 92.9% of respondents reported using mobile money for transactions, indicating near-universal adoption. This is consistent with national reports showing that mobile money has become the dominant payment platform in Uganda, driven by agent networks and low transaction costs. However, active usage (frequency) varies, as shown in the detailed analysis below.

**Table 4.3: Transaction Frequency Among Users**

<b>Frequency</b>	<b>Percentage of Users</b>
<b>Daily</b>	23.1
<b>Weekly</b>	41.2
<b>Monthly</b>	28.5
<b>Less than monthly</b>	7.2

*Source: Author's computations from Finscope Uganda 2023*

The mean transaction frequency score (on a 1–5 scale, where 5 = daily) was 3.82, indicating moderate to high engagement. However, 35.7% of users transacted less than weekly, suggesting that for a substantial minority, mobile money is used irregularly rather than as a routine financial management tool. This variation has implications for resilience: more frequent users may be better positioned to receive emergency funds quickly.

#### 4.2.2 Mobile Money Saving and Borrowing

Saving and borrowing behaviour refers to the use of mobile wallets for intentional saving and access to mobile-based credit products.

**Table 4.4: Mobile Saving and Borrowing Usage**

<b>Service</b>	<b>Frequency</b>	<b>Percentage of All Respondents</b>
<b>Mobile Saving</b>	1,420	44.7
<b>Mobile Borrowing</b>	980	30.9

*Source: Author's computations from Finscope Uganda 2023*

#### **Interpretation**

The data provided in Table 4.4 indicates that 44.7% of the respondents save money using mobile money, and 30.9% of the respondents borrow money using mobile money services. However, these two measures are relatively low compared to transaction usage, which stands at 92.9%. The mean saving score for the use of mobile money was 2.98, while the mean borrowing score was 2.45. From the data above, it can be observed that mobile money services can help increase resilience among households since savings act as a buffer against shocks, and borrowing helps individuals to smooth out their consumption in case of income gaps.

#### 4.2.3 Remittances Using Mobile Money Services

Remittances entail the transfer of money within a country or across borders through the mobile platform.

**Table 4.5: Remittance Usage**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Sends/receives remittances</b>	2,300	72.4
<b>Does not send/receive remittances</b>	876	27.6
<b>Total</b>	<b>3,176</b>	<b>100</b>

*Source: Author's computations from Finscope Uganda 2023*

### **Interpretation**

According to Table 4.5, 72.4% of the participants employ mobile money in sending remittances. This is because mobile money plays a crucial role in ensuring money is moved around through social networks. Remittances act as a way to cope with financial shocks since those families who receive transfers from family members are able to sustain their levels of consumption despite reduced incomes in the event of shocks. This is an indication that mobile money enhances financial resilience.

### **4.3 Household Financial Resilience among Ugandan Households**

The objective of this section is to investigate the relationship between mobile money and household financial resilience. Financial resilience was constructed based on the level of shock burden of the family where the higher the score the less financially resilient the family is. The shock burden score varied between zero and twenty-seven based on the extent to which unexpected events have affected the family's ability to bounce back.

**Table 4.6: Financial Resilience Categories**

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Not Resilient (High shock burden)</b>	1,150	36.2
<b>Resilient (Low shock burden)</b>	2,026	63.8
<b>Total</b>	<b>3,176</b>	<b>100</b>

*Source: Author's computations from Finscope Uganda 2023*

**Table 4.7: Shock Burden Score Statistics**

<b>Statistic</b>	<b>Value</b>
<b>Mean shock burden score</b>	17.0
<b>Standard deviation</b>	5.2
<b>Minimum</b>	2.0
<b>Maximum</b>	27.0

*Source: Author's computations from Finscope Uganda 2023*

### **Interpretation**

As shown in Table 4.6, 63.8% of households are financially resilient (low shock burden) and 36.2% are not resilient (high shock burden). This is not just one in every three Ugandan homes but severe shock burdens which they are unable to absorb fully. The average shock burden score is 17.0 (Table 4.7), which is one point shy of the high burden level of 18, meaning that the average household is approaching the resilience level. The standard deviation of 5.2 indicates a significant dispersion: there is a range of households with a minimum number of shocks (score 2.0) and households with great vulnerability (score 27.0).

These results are in line with Finscope Uganda 2023, which indicated that more than 90 percent of adults incurred unplanned costs, and 70 percent had problems with meeting their monthly needs. Included are common shocks such as health crises, farm failures, fluctuations in seasonal earnings, theft, and inflation of prices. The large percentage of non resilient households (36.2) is an important policy issue.

### **4.4 Correlation between Mobile Money and Household Financial Resilience.**

Objective Three is rigorously addressed in this section. The process of analysis consists of two phases: correlation analysis to test initial correlations; multivariate logistic regression analysis to isolate the independent effect of each dimension of the mobile money when the demographic factors are taken into account and heterogeneity is tested.

#### 4.4.1 Correlation Analysis

Pearson correlation coefficients have been determined to assess the direction and strength of the relationship between key variables.

**Table 4.8: Correlation Results**

Variable	(1)	(2)	(3)	(4)	(5)
(1) <b>Financial Resilience</b> (1=Resilient)	1.000				
(2) <b>Transaction Intensity</b>	0.382***	1.000			
(3) <b>Saving/Borrowing</b>	0.315***	0.512***	1.000		
(4) <b>Remittance Activity</b>	0.298***	0.487***	0.423***	1.000	
(5) <b>Residence</b> (1=Urban)	0.214***	0.185***	0.167***	0.152***	1.000

\*\*\*  $p < 0.01$

*Source: Author's computations from Finscope Uganda 2023*

#### Interpretation

Table 4.8 shows that there are positive and statistically significant correlations between all the three dimensions of mobile money usage and financial resilience. The highest correlation ( $r = 0.382$ ,  $p < 0.01$ ) is between transaction intensity and saving/borrowing, and the least is between transaction intensity and remittance activity ( $r = 0.298$ ). These coefficients mean that higher mobile money engagement is associated with higher likelihood of being financially resilient. The correlations between the usage dimensions per se are moderate to strong ( $r = 0.423$  to  $0.512$ ), not

surprising since those who engage in transacting regularly are also more likely to save, borrow, and remit. Multicollinearity (VIF) diagnostic tests indicated that multicollinearity is not too serious to bias regression estimates (mean VIF = 1.89). Resilience is also positively correlated with urban residence ( $r = 0.214$ ) which supports initial geographic differences.

#### 4.4.2 Regression Analysis

In order to strictly test the correlation between the dimensions of mobile money use and financial resilience of the household, the study estimated a logistic regression model with interaction terms in order to rigorously test the heterogeneity of the relationship between dimensions of mobile money use and the financial resilience of the household by residence and region.

**Table 4.9: Logistic Regression Results (Baseline Model)**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>p-value</b>	<b>Odds Ratio</b>
<b>Transaction Intensity</b>	0.612	0.087	0.000	1.844
<b>Saving/Borrowing</b>	0.438	0.094	0.000	1.550
<b>Remittance Activity</b>	0.357	0.102	0.001	1.429
<b>Residence (Urban)</b>	0.412	0.118	0.001	1.510
<b>Region (Eastern)</b>	-0.187	0.145	0.197	0.829
<b>Region (Northern)</b>	-0.324	0.152	0.033	0.723
<b>Region (Western)</b>	-0.156	0.148	0.292	0.856
<b>Gender (Male)</b>	0.089	0.095	0.348	1.093
<b>Age (31–45 years)</b>	-0.052	0.108	0.630	0.949
<b>Age (46–60 years)</b>	-0.114	0.124	0.358	0.892
<b>Age (60+ years)</b>	-0.218	0.162	0.179	0.804
<b>Constant</b>	-1.234	0.256	0.000	0.291

Source: Author's computations from Finscope Uganda 2023

**Table 4.10: Model Summary — Logistic Regression for Household Financial Resilience**

<b>Statistic</b>	<b>Value</b>
<b>Observations (N)</b>	<b>3,176</b>
<b>Pseudo R<sup>2</sup></b>	<b>0.124</b>
<b>Prob &gt; Chi<sup>2</sup></b>	<b>0.000</b>
<b>Hosmer-Lemeshow Chi<sup>2</sup></b>	<b>8.24</b>
<b>Hosmer-Lemeshow p-value</b>	<b>0.411</b>
<b>Overall correct classification (%)</b>	<b>74.2%</b>

Source: Author's computations from Finscope Uganda 2023

#### **Detailed Interpretation of Regression Coefficients**

Transaction × Northern (OR = 0.732,  $p < 0.05$ ): This negative correlation shows that, compared to other regions, the impact of the intensity of a transaction on resilience is much less intense in the Northern region. In the case of a household in the Northern region, the odds ratio of the intensity of transactions is  $1.844 \times 0.732 = 1.350$  (a 35.0% increase in odds) as compared to 84.4% increase in other regions. This indicates that inadequacy of infrastructure, lack of density of agents or poor quality of networks in the Northern region decreases the resilience building potential of mobile money transactions.

Saving/Borrowing × Rural (OR = 0.786,  $p < 0.05$ ): This negative interaction implies that the relationship between saving/borrowing and resilience is much less strong in the rural areas as compared to the urban ones. The odds ratio of saving/borrowing will be  $1.550 \times 0.786 = 1.218$  (an increase by 21.8) as opposed to an increase of 55.0 in urban areas. This could indicate that rural people are less financially literate, there are fewer mobile linked savings products that are rural-specific livelihoods, or they use more informal saving institutions (e.g., village savings groups) not registered as mobile saving.

Policy implications of these heterogeneity findings include the fact that promoting universal mobile money will not necessarily bridge resilience gaps. Specific interventions in terms of area specific and rural specific obstacles are required.

**Table 4.10: Logistic Regression with Interactions (Selected Significant Interactions)**

Variable	Coefficient	Std. Error	p-value	Odds Ratio
<b>Transaction Intensity</b>	0.612	0.087	0.000	1.844
<b>Saving/Borrowing</b>	0.438	0.094	0.000	1.550
<b>Remittance Activity</b>	0.357	0.102	0.001	1.429
<b>Residence (Urban)</b>	0.285	0.142	0.045	1.330
<b>Region (Northern)</b>	-0.198	0.178	0.266	0.820
<b>Transaction × Northern</b>	<b>-0.312</b>	<b>0.134</b>	<b>0.020</b>	<b>0.732</b>
<b>Saving/Borrowing × Rural</b>	<b>-0.241</b>	<b>0.119</b>	<b>0.043</b>	<b>0.786</b>
<b>Constant</b>	-1.201	0.268	0.000	0.301

*Source: Author's computations from Finscope Uganda 2023*

### **Interpretation of Interactions**

Transaction × Northern (OR = 0.732,  $p < 0.05$ ): This negative correlation shows that, compared to other regions, the impact of the intensity of a transaction on resilience is much less intense in the Northern region. In the case of a household in the Northern region, the odds ratio of the intensity of transactions is  $1.844 \times 0.732 = 1.350$  (a 35.0% increase in odds) as compared to 84.4% increase in other regions. This indicates that inadequacy of infrastructure, lack of density of agents or poor quality of networks in the Northern region decreases the resilience building potential of mobile money transactions.

Saving/Borrowing × Rural (OR = 0.786,  $p < 0.05$ ): This negative interaction implies that the relationship between saving/borrowing and resilience is much less strong in the rural areas as compared to the urban ones. The odds ratio of saving/borrowing will be  $1.550 \times 0.786 = 1.218$  (an

increase by 21.8) as opposed to an increase of 55.0 in urban areas. This could indicate that rural people are less financially literate, there are fewer mobile linked savings products that are rural-specific livelihoods, or they use more informal saving institutions (e.g., village savings groups) not registered as mobile saving.

Policy implications of these heterogeneity findings include the fact that promoting universal mobile money will not necessarily bridge resilience gaps. Specific interventions in terms of area specific and rural specific obstacles are required.

#### 4.5 Subgroup Analysis by Residence

To further validate heterogeneity, subgroup logistic regressions were estimated separately for urban and rural respondents.

**Table 4.11: Subgroup Regressions by Residence**

Variable	Urban (n=1,033)	Rural (n=2,143)
<b>Transaction Intensity</b>	0.684*** (0.112)	0.512*** (0.098)
<b>Saving/Borrowing</b>	0.524*** (0.124)	0.312** (0.132)
<b>Remittance Activity</b>	0.412** (0.142)	0.298** (0.118)
<b>Pseudo R<sup>2</sup></b>	0.152	0.098

\*\*\* p<0.01, \*\* p<0.05

*Source: Author's computations from Finscope Uganda 2023*

In urban dwellers, the coefficients of the three dimensions of mobile money are larger and the model is able to explain 15.2% of the change in resilience. Among rural residents, the impact is less, and the model only explains 9.8% of the variance. This substantiates the fact that mobile money plays a more powerful role in promoting financial resilience in urban regions, where infrastructure and digital literacy are more advanced.

## 4.6 Summary of Findings

The study found that:

- i. The best predictor of financial resilience of the household is mobile money transaction intensity (OR = 1.844). Frequent users have 84.4% higher odds of being resilient compared to less frequent users.
- ii. Mobile money saving and borrowing is also a very important factor in enhancing resilience (OR = 1.550), yet the adoption of this service is low: only 44.7% save and 30.9% borrow money through mobile money.
- iii. The positive but less significant effect is on the mobile money remittance activity (OR = 1.429), where 72.4% of households transfer money via mobile money.
- iv. There are important differences: the Northern region and the rural areas receive less resilience benefits of mobile money than the Central region and urban areas, respectively. Such gaps are motivated by infrastructure gaps, reduced agent density, and potentially reduced digital literacy.
- v. The general financial resilience is 63.8 percent of households, or 36.2 percent (above one in three) are still at risk of shocks even with the widespread adoption of mobile money.

## 4.7 Discussion of Findings

The conclusion that the transaction intensity is the best predictor of resilience is consistent with the results of Jack and Suri (2014), which revealed that M PESA users in Kenya had a higher capacity to smooth the consumption in response to income shocks. The process is lower transaction costs and quicker access to funds. This channel is readily available in Uganda where 92.9% of people transact using mobile money.

The beneficial albeit smaller saving/borrowing impact is also in line with Munyegera and Matsumoto (2016) who discovered that mobile money savings increased household welfare in Uganda, yet adoption was a limitation. Low saving/borrowing rates (44.7% and 30.9) indicate that barriers to greater engagement are product design, trust, or financial literacy.

The remittance result (OR = 1.429) confirms the hypothesis of the risk sharing: mobile money reinforces social ties, and households can get transfers when in need. The smaller effect size, however, is indicative of the fact that remittances are contingent on the presence of migrant family members, which is not available in all households.

The findings of heterogeneity (weaker effects in the North and rural areas) are also confirmatory of the findings by the World Bank (2019) in Northern Uganda: the remote, poor areas are less likely to benefit through mobile money because of agent distance (median 25.2 km to a bank branch) and network gaps. This is a policy imperative: getting access broadly is not enough, quality of access (agent density, network reliability, digital literacy) is a critical issue as well.

#### **4.8 Chapter Conclusion**

This chapter provided empirical evidence on the correlation between the dimensions of mobile money usage and financial resilience of households among adults in Uganda. The descriptive analysis showed that the transaction usage was almost universal (92.9) but the saving (44.7) and borrowing (30.9) uptake was much lower. The financial resilience is at 63.8 and 36.2% of households are vulnerable. The regression analysis established that the intensity of transactions, saving/ borrowing, and activity of remittance have significant positive impacts on resilience. Nevertheless, the gains in resilience are not evenly distributed: The Northern region and rural areas have much lower gains. These findings are discussed, conclusions are drawn and policy recommendations provided in the following chapter.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATION.

#### 5.1 Introduction

This chapter offers an overview of the study findings, conclusions to the empirical evidence found in Chapter Four, and practical recommendations about policy, practice and future research. The article researched the connection between the use of mobile money and household financial resilience in Uganda, considering three aspects: the intensity of mobile money transactions, saving and borrowing behaviour, and remittance activity, and heterogeneity in terms of residence (urban/rural) and region (Finscope Uganda, 2023; Jack and Suri, 2014). The chapter also discusses the limitations of the study and suggests areas for further investigation.

#### 5.2 Summary of Findings

The research had three objectives to direct the study and the main findings are as follows.

##### 5.2.1. Influence of Mobile Money Transfer on Financial Resilience.

The former objective investigated the impact of the intensity of mobile money transactions on household financial resilience in Uganda. The regression analysis indicated that the intensity of transactions positively and significantly influences resilience ( $OR = 1.844, p < 0.01$ ). One unit increase in intensity of transactions (scale 1-5) is linked to 84.4% increase in the probability of becoming financially resilient, other things unchanged. This effect was also strong in all the model specifications. This result is in line with Jack and Suri (2014), and Munyegera and Matsumoto (2016) who concluded that mobile money transfers assist households in sustaining consumption in the face of economic shocks. Thus Objective 1 was met: mobile money transactions have a huge positive impact on household financial resilience.

### **5.2.2. The effect of Mobile Money Saving and Borrowing Services on Financial Resilience.**

The second objective determined the impact of mobile money saving and borrowing services on financial resilience. The results revealed that saving/borrowing usage is positively and significantly associated with resilience (OR = 1.550,  $p < 0.01$ ). A one unit increase in saving/borrowing is associated with a 55.0% increase in the odds of resilience. Nonetheless, the adoption is poor: only 44.7 percent of surveyed use mobile money as a savings method, and only 30.9 percent do so as a borrowing method. This result is consistent with the conclusion of World Bank (2019), who discovered mobile savings products enhance the welfare of households but barriers to adoption limit their effects. Thus, the Objective 2 was successfully met: mobile money saving and borrowing services have a positive impact on financial resilience, but they cannot be fully utilized due to the low adoption.

### **5.2.3. The impact of Mobile Money Remittances on Financial Resilience.**

The third objective analysed whether mobile money remittance activity influences financial resilience. The findings indicated that the remittance activity positively and significantly influences it (OR = 1.429,  $p < 0.01$ ). The odds of resilience are 42.9 percent higher with a one unit increase in remittance activity. This was a strong effect in model specifications. This finding supports the risk-sharing theory: mobile money enables faster, cheaper remittances, strengthening social safety nets (Suri & Jack, 2016). The effect is, however, less than transactions and saving/Borrowing, since not all households will have migrant family members to send and/or receive. Thus, Objective 3 was met: mobile money remittances have a positive impact on financial resilience.

### **5.2.4 Heterogeneity: by Residence and Region.**

The research also investigated whether effects of resilience of mobile money are different among respondent characteristics. The findings established that there was a high degree of heterogeneity. The interaction term Northern  $\times$  Transaction was negative and significant (OR = 0.732,  $p < 0.05$ ), which indicates that the influence of the intensity of transactions on the resilience is much lower in the Northern region than in other regions. The same was applied to Saving/Borrowing  $\times$  Rural (OR = 0.786,  $p < 0.05$ ) as the savings/borrowing is less beneficial to rural households than to urban

households. Subgroup regressions affirmed that among urban inhabitants, all three dimensions of mobile money coefficients are higher (Pseudo R<sup>2</sup> = 0.152) compared to rural inhabitants (Pseudo R<sup>2</sup> = 0.098). These results validate trends found by the World Bank (2019) in Northern Uganda: remote, poor regions receive less advantage of mobile money because of the lack of infrastructure, lower agent concentration, and worse network coverage.

### 5.3 Conclusions

Conclusions are made based on the findings, which are as follows:

- i. In Uganda, M-money transfers have a great impact on financial stability of households. The fact that the biggest impact is on transaction intensity (84.4% odds of resilience increase) supports the idea that the mechanism by which mobile money constructs resilience is by granting access to low-cost access to funds during emergencies. Frequently-transacting households can get remittances, settle bills on time and save the high costs of informal transfers. This is in line with Financial Inclusion Theory (Demirgüç-Kunt et al., 2018), which holds that exposure to digital financial services lowers exposure.
- ii. The adoption of mobile money saving and borrowing services have a positive impact on resilience, but low adoption restricts their potential. Saving/borrowing users are 55.0% more likely to be resilient, however less than half of adults save through mobile money and only one-third borrow. This is a lost chance: mobile savings can create buffers against shocks, and mobile credit can be used to even out consumption when income falls short. The difference in the usage of transaction (92.9) and saving/borrowing usage (44.7 and 30.9) indicates that product design, lack of trust, financial literacy or affordability inhibits further use.
- iii. Money remittances through mobile money enhance financial resilience of households though this is contingent on social networks. Remittance users have 42.9% higher odds of resilience, confirming that mobile money enhances risk-sharing. But this channel is not available to households that do not have migrant family members. Thus, remittances are supplementary to, rather than substitutes of, personal savings or credit.
- iv. Mobile money does not have equal distribution benefits in Uganda. Mobile money has a much smaller resilience gain in the Northern region and rural areas than in the Central region and urban areas. These differences are motivated by infrastructure differences (agent distance,

network coverage) and reduced digital literacy, and potentially reduced income levels. This implies that mobile money access is not enough and access quality is equally important.

- v. In spite of the popularity of mobile money, 36.2% of households in Uganda are still financially vulnerable. Over one out of every three households have a high shock load which they are unable to absorb. Ordinary shocks (health crises, agricultural damages, price rises) keep driving households into adverse coping mechanisms (e.g., cutting back on meals, selling assets, pulling children out of school). Mobile money is an instrument, it is not a panacea; systemic weaknesses have to be addressed on a wider policy scale.

## 5.4 Recommendations

Against the conclusions, the policy, practice, and future research recommendations are made.

It is recommended that policy makers (Bank of Uganda, Ministry of Finance, Ministry of Gender) can improve the situation.

- i. Investment in Northern region and rural areas infrastructure of Target. Since the Northern region receives much less benefits on resilience due to mobile money (OR = 0.732 interaction), the government must focus on mobile network coverage, the density of an agent network and the access to trustworthy electricity in underserved regions. Uganda National Broadband Strategy must have certain targets on mobile money agent coverage in the rural sub -counties.
- ii. Encourage mobile savings/borrowing via financial literacy programs. Only 44.70% save and 30.90% borrow through mobile money, the Bank of Uganda and FSD Uganda should develop country-wide campaigns that explicitly inform households on how mobile wallets can be used to intentionally save (e.g., setting savings targets, locked savings offerings) and to borrow responsibly (e.g., understanding interest rates, avoiding excessive indebtedness). Community radio, mobile phone messages and partnership with village savings groups should be used to deliver the campaigns in the local languages.
- iii. Encourage mobile money savings products to low-income households. Regulatory sandboxes or tax incentives should be used to encourage mobile money operators to create low-balance no-fee savings products that are designed to meet the needs of rural and low-income users. Consider, as an example, "round-up" savings schemes (in which transactions

- are rounded to the nearest 1 000 UGX and the balance saved) could assist households in building buffers without decision-making.
- iv. Incorporate mobile money into programmes on social protection. By default, mobile money should be used to provide the social assistance programmes of the government (e.g., Senior Citizens Grant, Vulnerable Families Grant, and emergency COVID-19 or drought relief). This would not only give instant assistance to those in need of it, but it would also normalise the use of mobile money (non-transactions, saving and receiving formal transfers). Kenyan evidence reveals that digital social transfers boost consumption and asset accumulation.

#### **5.4.2 Mobile Money Operator (MTN Mobile Money, Airtel Money)**

- i. Develop rural-specific saving and credit products. Since the saving/borrowing effect is less strong in the rural areas (OR = 0.786 interaction), operators must create products that will accommodate the rural limitations: smaller loan amounts (e.g., 20,000-100,000 UGX), customizable repayment schedules to match the harvesting periods and the absence of an early repayment penalty. The training module on explaining saving/borrowing products to low-literacy customers should be included in the training of the agent.
- ii. Use transaction history to create credit histories. The majority of users of mobile money (92.9) are frequent and only 30.9 borrow. The transaction history (frequency, volume, regularity of bill payments) should be used to automatically pre-authorize small loans by operators and eliminate formal applications or collateral. This would greatly increase access to credit to the informally employed.
- iii. Minimize the transaction costs when making transfers of small value. Although mobile money has lowered the cost of transferring money as opposed to informal transfers, very poor households are still not able to afford the fees. In the case of transfers lower than 10,000 UGX, operators should think about zero-fee or lower-fee levels, as small, frequent transfer is essential when it comes to smoothing daily consumption.

### **5.4.3 Development Partner and NGO recommendations (FSD Uganda, GSMA, UNDP)**

- i. Promote women and rural residents digital literacy programmes. The heterogeneity results indicate that mobile money is less beneficial to rural and Northern households. Community based digital literacy programmes to include saving, budgeting, and responsible borrowing in addition to basic transaction skills should be funded by development partners. Peer mentoring (trained community health volunteers or leaders of village savings groups) could be more effective than centralised training.
- ii. Integrate mobile money into existing resilience-building programmes. Mobile money should be used as a delivery mechanism in agricultural extension services, health insurance schemes and disaster preparedness programmes. As an illustration, agricultural insurance payouts provided by indexes through mobile money can be received by farmers quicker than cheque or cash payouts, allowing them to plant before the subsequent season.
- iii. Invest in the field of mobile money and resilience (see section 5.4). Multi-year panel studies commissioned by development partners that follow the changes in the patterns of mobile money use over time and their impacts on resilience overtime, especially in the Northern region and rural areas, should be developed.

### **5.4.4 Recommendations for Households and Communities**

- i. Intentional saving, not just transactions, should be done with mobile money. The households are to be advised to keep a certain amount of every mobile money transfer (e.g., 5-10 percent) in a special mobile savings wallet. Simple, frequent savings add up to buffers that can meet unforeseen costs without selling assets or incurring debt.
- ii. Join mobile-linked village savings groups. Savings groups where mobile money is contributed and paid out should be taken into consideration by communities, which would keep the security risk of cash possession low and a clear trace of transactions.

### **5.5 Study limitations.**

When interpreting the findings, the following limitations must be taken into consideration:

- i. Cross-sectional design. The data were also gathered at one point in time (Finscope Uganda 2023), which does not allow establishing causal relationships with confidence. The

- relationships observed can be both directional: robust households can be more inclined to use mobile money, as opposed to mobile money making households resilient. To determine causality, longitudinal data would be necessary.
- ii. Self-reported data. The self-reporting of mobile money use and shock experience can have recall bias (respondents forgetting or misremembering their transactions or shocks) or social desirability bias (respondents exaggerating their use or resilience). Finscope survey protocols have validation checks to reduce such problems, though.
  - iii. Binary resilience measure. In the study, a composite score was used to classify households as resilient (low shock burden) or not resilient (high shock burden). Although this is a common method, it oversimplifies the concept of resilience (which involves how fast one recovers, quality of coping strategies, and vulnerability to future). Subtler measures could have been employed in the future studies.
  - iv. No actual density or network quality of mobile money agents. The work made the inference of geographic differences based on the variables of regions and residence but lacked direct measures of agent distance, network reliability, and transaction success rates. These variables need to be gathered in future research.
  - v. Poor external validity in other regions other than Uganda. The results are limited to the mobile money market of Uganda (MTN and Airtel dominate it and there is a fairly high adoption rate). They might not be extrapolated in other countries with different regulatory systems, lower adoption rates and other mobile money products.

## **5.6 Future Research Areas.**

To follow up on the findings and limitations, the areas that may be suggested as the future study include:

- i. Longitudinal studies to determine causality. Future studies ought to follow the same households across 2-3 years to study the impact of variations in mobile money usage (e.g. beginning to save using mobile money, increasing frequency of transactions) on the future resilience outcome, with control over initial resilience. This would give more credence to causal assertions.
- ii. Barrier to saving and borrowing studies on a qualitative basis. Since the difference between transaction and saving/borrowing usage (92.9 vs. 44.7/30.9) is quite huge, a more in-depth

- exploration of the non-user population in both interviews and focus groups may provide insight into whether the impediments are more supply-side (product design, fees, agent knowledge) or demand-side (trust, financial literacy, cultural norms). Such understandings would support specific interventions.
- iii. Mobile savings products experimental studies. Randomised controlled trials might be used to evaluate the hypothesis that a given product attribute (e.g., savings goals, commitment devices, SMS reminders, round-up features) boosts mobile saving adoption and later resilience. As an illustration, would a product (locked savings) (money cannot be taken out before a pre-set date) result in a greater amount of saved money than a regular (wallet)?
  - iv. Research about mobile money and women resiliency. Even though gender was not of great importance to the main regression, subgroup analysis revealed that women are less likely to be saving/borrowing uptake. Further studies on the topic should consider whether mobile money has a different impact on the resilience of women, as women in Uganda are less financially included formally and more likely to be responsible to smooth household consumption.
  - v. Studies on the interaction between mobile money and informal mechanisms. Informal mechanisms (village savings groups, ROSCAs, informal credit by traders) and mobile money are used by many households. Further studies are needed on whether mobile money supplements or replaces these informal mechanisms, and the two-way relationship on resilience.
  - vi. Cost-effectiveness studies. Policymakers should have an understanding of whether mobile money infrastructure, digital literacy or saving product development will be more cost-effective than other resilience-building interventions (e.g., cash transfers, agricultural insurance, public works programmes). Further studies are necessary to compare the price of the household relocated between non-resilient and resilient with various interventions.

## **5.7 Conclusion**

This chapter recapped the main findings, conclusions, and recommendations in regard to the three objectives of the study. The researchers affirmed that the intensity of mobile money transactions, saving/borrowing utilization, and remittance activity all enhance the financial resilience of households significantly in Uganda. The benefits are however not evenly distributed: the Northern and the rural territories receive much smaller benefits in terms of resilience. These discoveries highlight the necessity of equity-oriented and targeted interventions that can be used to fill in the infrastructure gaps, enhance mobile saving and borrowing, and develop digital literacy among the vulnerable groups. Rural investments and investments in the Northern region should be prioritized by policymakers, mobile money operators, and development partners, saving products should be designed to be used by the low-income households, and mobile money should be embedded in the social protection programs. The next round of digital financial inclusion policy in Uganda needs to be informed by the evidence presented by this study and thus should be conducted using longitudinal designs, qualitative and experimental techniques in the future.

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