

**DRIVERS OF BORROWING DECISIONS AND CHOICE OF SOURCE OF CREDIT AMONG
SMALLHOLDER FARMERS IN NORTHERN UGANDA**

OCEN JASPER

BSc. AGRICULTURE (MUK)

18/U/2907/MAE

**A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND
GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN AGRI-ENTERPRISES
DEVELOPMENT OF GULU UNIVERSITY**

OCTOBER, 2025

DECLARATION

I, **Ocen Jasper**, do hereby declare that this study is my own work and has never been submitted for a degree program in any University

Sign:  Date: 27/10/2025

Ocen Jasper

18/U/2907/MAE



APPROVAL

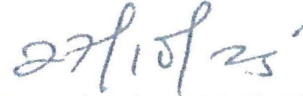
This dissertation has been submitted for examination with the approval of the following supervisors.

Sign:.......... Date:..........

Dr. Stephen Wamala Kalule (PhD)

Department of Rural Development and Agribusiness

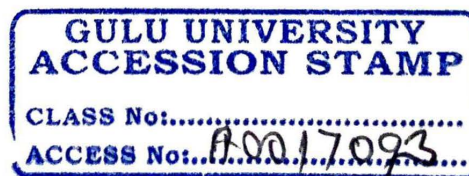
Gulu University

Sign:.......... Date:..........

Eng. Dr. Jimmy Byakatonda (PhD)

Department of Biosystems Engineering

Gulu University



DEDICATION

I dedicate this work to my entire family, for their tremendous support and encouragement

ACKNOWLEDGEMENT

I begin by acknowledging God Almighty for His Grace that enabled me to push on Financially, Health wise, and emotionally.

To all my lecturers who have been patient and supportive to me, thank you so much for not giving up on me and for your encouragement that kept me going. I attribute my achievement to your efforts. My research supervisors, Dr. Stephen Wamala Kalule and Eng. Dr. Jimmy Byakatonda, you have whole heartedly shared with me your knowledge whose value I cannot afford. Special appreciation to you and may God bless you richly.

My employers, Naseco (1996) Ltd, MWH Trust and Oxfam in Uganda have done great by entrusting me to work with them while accepting me to continue with my studies and the encouragement from my colleagues in these organizations kept me pushing on. No words can express my gratitude to my friends, colleagues and management of these organizations.

To classmates who sacrificed to discuss with me late at night, I appreciate you and may all your dreams come true. Lastly, I say thank you to my parents and relatives for the encouragement to push on. The Admiration of my uncle, Dr. Engineer Christopher Ebal kept me pushing on.

TABLE OF CONTENTS

DECLARATION.....	i
APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ACRONYMS.....	x
ABSTRACT.....	xi
CHAPTER ONE: INTRODUCTION.....	12
1.1 Background of the study	12
1.2 Statement of the Problem.....	14
1.3 Objective of the study	15
1.3.1 General Objective.....	15
1.3.2 Specific Objectives.....	15
1.4 Research Questions	15
1.5 Significance of the study.....	16
1.7 Conceptual Framework.....	17
1.8 Scope of the study:.....	19
CHAPTER TWO: LITERATURE REVIEW	20
2.1 Overview of access to credit among smallholder farmers in Uganda	20
2.2 Characteristics of smallholder farmers in Uganda.....	21
2.3 Factors influencing borrowing decisions among smallholder farmers	23

2.4 Factors affecting choice of source of borrowing among smallholder farmers	25
2.5 Summary of Literature reviewed	27
CHAPTER THREE: METHODOLOGY	29
3.1 Study Area.....	29
3.2. Study Design.....	30
3.3 Sample Size determination and Sampling Procedure	31
3.3.1 Sample size determination	31
3.3.2 Sampling Procedure	31
3.4 Data Collection	32
3.6 Data Analysis	33
3.6.1 Borrowing characteristics of smallholder farmers	34
3.6.2 Drivers of borrowing decision among smallholder farmers.....	34
3.6.3 Factors influencing choice of source of borrowing among smallholder farmers.....	35
3.7 Ethical Consideration.....	37
CHAPTER FOUR: PRESENTATION OF RESULTS	38
4.1: Characteristics of smallholder farmers	38
4.2: Factors affecting borrowing decision among smallholder farmers	40
4.4: Factors influencing choice of borrowing sources among smallholder farmers	41
CHAPTER FIVE: DISCUSSION OF RESULTS.....	45
5.1 Borrowing characteristics of smallholder farmers	45
5.2 Drivers of borrowing decision among smallholder farmers	45
5.3 Factors influencing choice of borrowing source among smallholder farmers.....	48
CHAPTER SIX: CONCLUSION, RECOMMENDATIONS.....	51

6.1 Conclusion	51
6.2 Recommendations	52
REFERENCES	54
APPENDICES	63
Appendix I: Questionnaire for smallholder farmers	63
Appendix II: GUREC Clearance.....	69
Appendix III: Consent Form	71
Appendix IV: Binary Logistic Regression (Stata Output)	74
Appendix V: Multinomial Regression (Stata Output)	75
Appendix VI: Probit Regression (Stata Output)	76
Appendix VII: Krejcie and Morgan Table.....	77

LIST OF TABLES

Table 3.1 Variables used in the binary logistic regression model	35
Table 3.2: Variables used in multinomial regression model	37
Table 4.1: Chi-square test for association between socio-economic characteristics and borrowing	39
Table 4.2: T-test for mean differences between socioeconomic characteristics and borrowing	40
Table 4.3: Borrowing among smallholder farmers	40
Table 4.4: Factors affecting borrowing decisions among smallholder farmers	41
Table 4.5: Sources of borrowing among smallholder farmers	42
Table 4.6: Factors influencing choice of borrowing sources among smallholder farmers	44

LIST OF FIGURES

Figure 1: Conceptual Framework showing the relationship between socio-economic factors, credit attributes, borrowing decision and borrowing source.....	18
Figure 2: Map of Amuru and Nwoya districts	30

LIST OF ACRONYMS

ACF	Agricultural Credit Facility
ADB	African Development Bank
FAO	Food and Agricultural Organisation of the United Nations
Fintech	Financial Technology
GUREC	Gulu University Research Ethics Committee
IFAD	International Fund for Agricultural Development
MFI	Microfinance Institution
MoFPED	Ministry of Finance Planning and Economic Development
ROSCAS	Rotational Saving and Credit Associations
SDG	Sustainable Development Goals
SHF	Smallholder Farmers
UBOS	Uganda Bureau of Statistics
UWEP	Uganda Women Entrepreneurship Program
VSLA	Village Saving and Loan Association

ABSTRACT

Access to credit plays a critical role in improving the livelihoods of smallholder farmers by enabling them to invest in agricultural inputs, expand production, and enhance food security. However, smallholder farmers in Northern Uganda continue to face challenges in accessing agricultural credit due to socio-economic and institutional barriers. This study examined the influence of socio-economic factors and credit attributes on borrowing decisions and choice of agricultural credit source among smallholder farmers in Northern Uganda. A cross-sectional survey design was employed to collect data from 223 smallholder farmers in Amuru and Nwoya districts. Data were analyzed using descriptive statistics, binary logistic regression, and multinomial logit regression models. The study findings revealed that 65% of the farmers had borrowed credit. Additionally, borrowing decisions were significantly influenced by the sex of household head, one-off repayment schedule, collateral requirement, number of farm labourers, credit approval history, marital status, and interaction between sex of household head and interest amount. Furthermore, the choice of credit source was significantly influenced by sex of household head, credit approval history, interest amount, collateral requirement, credit amount, and participation of female spouse in credit application. Village Savings and Loan Associations (VSLAs) were the most common source of borrowing, followed by microfinance institutions. The study concludes that both socio-economic factors and credit attributes jointly determine smallholder farmers' borrowing decisions and their choice of credit sources. Enhancing access to agricultural credit therefore requires addressing gender disparities, reducing collateral constraints, and aligning repayment schedules with agricultural income cycles. The study recommends that financial institutions should develop gender-sensitive and farmer-friendly credit products, including flexible repayment schedules and group-based collateral systems. Government and development partners should strengthen financial literacy and promote inclusive agricultural credit policies to ensure equitable access to credit among smallholder farmers in Northern Uganda.

Keywords: *Borrowing Decisions, Credit source, Smallholder farmers, Northern Uganda*

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Globally, access to credit plays a critical role in improving the livelihoods of smallholder farmers, enabling them to invest in inputs, expand their production, and enhance food security. However, there are significant disparities in accessing credit, with smallholder farmers typically facing more challenges than their semi commercial and commercial counterparts (Tsige et al., 2020). The smallholder farmers are believed to constitute two thirds of the most poor and, yet they have less access to productive resources, including credit, due to cultural and legal barriers (Waje, 2020). Common sources of credit for smallholder farmers include microfinance institutions, cooperatives, and informal lending groups. Despite various global initiatives, such as the G7's commitment to financial inclusion, gaps in financial access remain persistent in rural farming communities (Cherotich et al., 2022).

In Africa, agriculture is a cornerstone of economic development, and smallholder farmers account for a significant proportion of agricultural production (B. B. Balana et al., 2022). However, access to formal financial services, including credit, remains low. Studies show that smallholder farmers face numerous challenges, including limited collateral, lack of financial literacy, and discrimination from lending institutions (Ankrah Twumasi et al., 2020). The African Development Bank (AfDB) reports that less than 10% of smallholder farmers across Africa have access to agricultural credit. Sources of credit in rural Africa are dominated by informal lending mechanisms, such as Rotational Savings and Credit Associations (ROSCAs), village banks, and mobile money services, which tend to have lower barriers to entry but often provide insufficient amounts to meet agricultural needs (Musabanganji et al., 2016).

In East Africa, smallholder farmers form the backbone of agricultural production, contributing significantly to food security and economic growth. In this region, smallholder farmers are more reliant on informal sources of credit, such as local savings and loan associations and microfinance institutions, which often offer smaller loans with higher interest rates compared to formal banks. Despite efforts by governments and non-governmental organizations to improve access to finance, the borrowing gap among smallholders farmers persists (Sanka & Nkilikiwa, 2021).

In Uganda, where smallholder farmers account for the majority of the agricultural production, access to credit remains very low. Only 26% of smallholder farmers have access to formal credit, with women being particularly disadvantaged due to factors such as lack of collateral, lower levels of education, and discriminatory lending practices (Okonya & Kroschel, 2014). Despite the introduction of financial inclusion programs, including microfinance institutions and agricultural credit schemes, smallholder farmers continue to rely heavily on informal sources such as savings groups and cooperative societies (Okonya & Kroschel, 2014). The government has also initiated the Uganda Women Entrepreneurship Program (UWEP) to address some of these disparities, but challenges remain in bridging the gender gap in access to agricultural credit.

In Northern Uganda, which has experienced decades of civil conflict, access to credit among smallholder farmers is further constrained by a weak financial infrastructure and lingering socio-economic challenges (Simonyan et al., 2019). Gender dynamics are particularly pronounced in this region, where traditional norms often limit women's access to land ownership and, by extension, their eligibility for credit (Kiplimo, Ngenoh, & Bett, 2015). As in the rest of Uganda, smallholder farmers in Northern Uganda rely heavily on informal credit sources such as village savings and loan associations (VSLAs) and local moneylenders. The limited presence of formal financial

institutions in rural areas exacerbates these challenges, contributing to the persistence of gender disparities in access to agricultural finance. Efforts by non-governmental organizations and development partners to improve financial literacy and access to credit for women in Northern Uganda have yielded some progress, but the gap remains significant (Kiplimo, Ngenoh, & Bett, 2015).

1.2 Statement of the Problem

Access to credit is a crucial component of agricultural development, particularly for smallholder farmers who often face financial constraints in improving their productivity. Despite the importance of credit in facilitating farm inputs and technology adoption, significant gender disparities persist in access to financial services. Smallholder farmers who constitute a substantial portion of the farmers, often face more barriers to credit access compared to their large-scale counterparts (Mahasha et al., 2022). These barriers are driven by social, cultural, and institutional factors that disadvantage smallholders, such as lack of collateral, limited financial literacy, and smallholder-biased lending practices (Lazaro & Alexis, 2021).

The issue of access to credit has received attention in literature, yet most studies focus on macro-level analyses without delving into micro-level dynamics, particularly within smallholder farmer communities. For instance, although (Argaw-Gizachew, 2017) highlight gender inequalities in access to agricultural resources, there is limited focus on how these inequalities manifest in credit access specifically for smallholder farmers. Similarly, existing studies tend to generalize findings across regions without addressing the context-specific barriers women face in diverse agricultural settings.

This study seeks to fill this gap by exploring the dynamics in access to credit among smallholder farmers, with a specific focus on understanding the underlying social and economic factors that influence borrowing decisions among smallholder farmers. Addressing this gap is critical for designing policies and interventions that promote equitable access to financial resources, which in turn can enhance the performance of smallholder farmers and contribute to broader rural development goals.

1.3 Objective of the study

1.3.1 General Objective

To assess the factors influencing borrowing decisions and choice of agricultural credit sources among smallholder farmers in Northern Uganda

1.3.2 Specific Objectives

- i. To establish the borrowers' characteristics of smallholder farmers
- ii. To determine factors driving decisions to borrow agricultural credit among smallholder farmers
- iii. To ascertain the effect of credit characteristics and other factors on choice of source of borrowing among smallholder farmers

1.4 Research Questions

- i. What are the borrowing characteristics of smallholder farmers?
- ii. What are the drivers of borrowing decisions among smallholder farmers?

- iii. What are the effects of credit characteristics and other factors on choice of source of borrowing among smallholder farmers?

1.5 Significance of the study

Understanding the barriers and opportunities in accessing credit for both men and women helps address gender-based disparities in rural finance. The insights from this study can guide policymakers and stakeholders in developing gender-responsive financial products and services, ensuring that both male and female farmers can benefit equally from credit opportunities.

Access to credit plays a crucial role in enhancing agricultural productivity by enabling smallholder farmers to invest in inputs, technology, and better farming practices. By investigating drivers of borrowing decisions, the study can reveal how unequal access affects productivity, thereby informing strategies to support more inclusive agricultural growth.

Women constitute a significant portion of the agricultural labor force, especially among smallholder farmers. Improving their access to credit can empower them economically, leading to better decision-making in households, enhanced food security, and poverty reduction. This study highlighted the specific needs and challenges faced by both men and women, helping to tailor interventions that promote their economic participation.

The findings of this study provide evidence-based recommendations for government and development organizations to design policies that improve access to credit for smallholder farmers, with a focus on gender inclusivity. This is critical for fostering rural development and achieving broader national development goals, including financial inclusion and poverty alleviation.

The study aligns with several SDGs, including Goal 5 (Gender Equality) and Goal 2 (Zero Hunger), by addressing inequalities in credit access that impact agricultural productivity and food security. By identifying the drivers of borrowing decisions, the study contributes to efforts aimed at achieving sustainable agricultural practices and ensuring inclusive economic growth.

Credit access can significantly impact household welfare by improving income, food security, and resilience to shocks. By examining credit terms influencing choice of credit source, this study will provide valuable insights into how credit terms may influence borrowing decisions of households and inform strategies to enhance their financial well-being.

1.6 Limitations of the study

Smallholder farmers are always overwhelmed by various demands for financial resources for various household needs. Therefore, this study was limited by difficulties in isolating agricultural credit demand from other household financial needs. Similarly, the study was limited to exploring the possibility of the farmers borrowing from only one source without exploring the possibilities of the smallholder farmers borrowing from multiple sources at ago. The study was also limited to exploring the demand side of credit without considering the supply side.

1.7 Conceptual Framework

The relationship between the independent variables (socio-economic factors and credit attributes) and the dependent variable (borrowing decision, source of borrowing) is not deterministic but rather complex and interconnected. Changes in socio-economic factors and credit attribute individually or collectively influence borrowing decision and choice of source of borrowing among smallholder farmers. For example, favorable socio-economic factors coupled with favorable attributes could result in increased likelihood of borrowing among smallholder farmers.

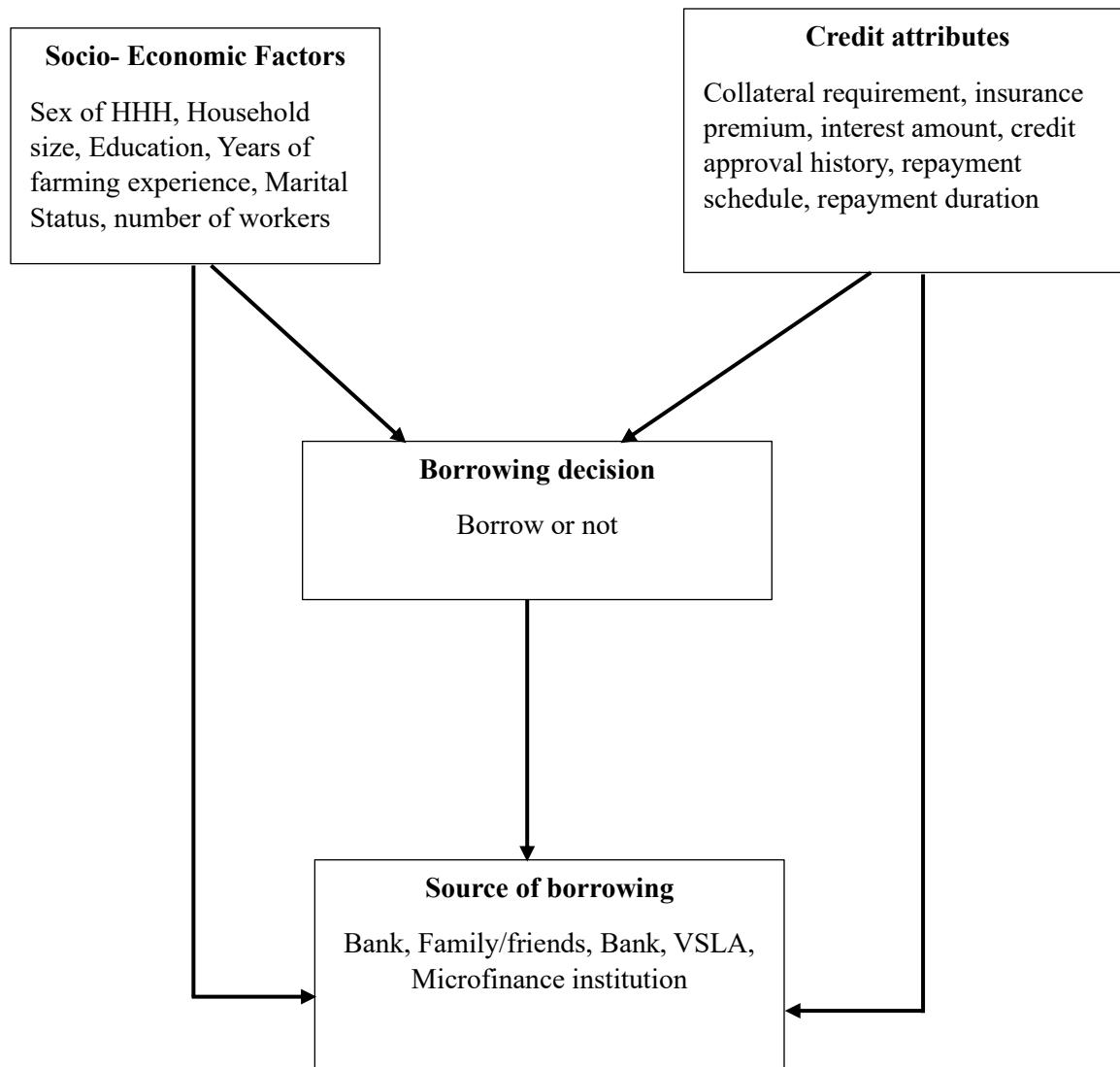


Figure 1: Conceptual Framework showing the relationship between socio-economic factors, credit attributes, borrowing decision and borrowing source

Conversely, unfavorable socio-economic factors and unfavorable credit attributes could translate to less likelihood of borrowing among smallholder farmers. Generally, the relationship between the independent variables (socio-economic factors and credit attributes) and the dependent variable (borrowing decision, source of borrowing) is dynamic and can vary depending on various contextual factors and interactions. This is demonstrated in (Figure 1).

1.8 Scope of the study:

The study was intended to cover the factors influencing credit decisions among the smallholder farmers and factors that determine the choice of the credit source for the smallholder farmers. It was concentrated in the two districts of Nwoya and Amuru of Acholi sub-region of Northern Uganda. The study population were smallholder farmers who had been linked to financial institutions by CARITAS, a non-government organization in Gulu. The smallholder farmers from whom data was collected comprised of both those who had ever borrowed from different sources and those who had never borrowed from any source.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview of access to credit among smallholder farmers in Uganda

Access to credit is a crucial component in improving the productivity and livelihood of smallholder farmers in Uganda. Smallholder farmers, who constitute the majority of the agricultural workforce, face numerous challenges such as lack of financial resources, which limits their ability to invest in inputs like seeds, fertilizers, and modern farming technologies (Okonya & Kroschel, 2014). Only a small percentage of smallholder farmers have access to formal financial institutions. This limited access has been attributed to factors such as lack of collateral, high interest rates, and inadequate financial literacy among farmers (Okonya & Kroschel, 2014). As a result, many smallholder farmers rely on informal credit sources such as savings groups, relatives, or money lenders, which often come with unfavorable terms.

In Uganda, access to credit is largely influenced by the geographical location of the farmers. Rural areas, where most smallholder farmers are based, are under served by formal financial institutions due to high transaction costs, poor infrastructure, and the perceived risk of lending to agriculture (Lemessa & Gemechu, 2016). This challenge is compounded by the seasonality of agriculture, which makes it difficult for farmers to generate consistent cash flows to meet loan repayment schedules. Despite government efforts through initiatives like the Agricultural Credit Facility (ACF) and the Uganda Development Bank, the reach of these programs is still limited, and most farmers remain excluded from formal credit markets (Owolabi et al., 2011).

Additionally, it is believed that gender plays a significant role in access to credit among smallholder farmers in Uganda. Women are less likely to participate in decision-making processes

within households, which affects their ability to seek and utilize credit effectively (Chauke et al., 2013). Addressing these gender disparities is critical for improving agricultural productivity and food security in the country.

Recent developments in financial technology (fintech) are providing alternative solutions for smallholder farmers to access credit. Mobile money platforms and digital credit schemes are making it easier for farmers to access small loans without the need for physical bank branches (Isaga, 2018). These platforms also offer more flexible repayment terms that align with the agricultural seasons. However, challenges such as limited digital literacy and poor network coverage in rural areas hinder the full adoption of these technologies (Isaga, 2018). Nevertheless, the potential for digital financial services to improve credit access for smallholder farmers in Uganda is promising and continues to grow as more farmers adopt mobile banking.

2.2 Characteristics of smallholder farmers in Uganda

The borrowing characteristics of smallholder farmers are shaped by various socio-economic, institutional, and environmental factors. Smallholder farmers often exhibit conservative borrowing behaviours due to the risks and uncertainties associated with agriculture, including erratic weather patterns, price fluctuations, and crop failures (Chauke et al., 2013). Consequently, these farmers are generally risk-averse, preferring to minimize debt even when they face credit constraints. According to Motsoari et al., (2015), smallholder farmers in many developing countries, including Uganda, typically borrow for short-term needs such as buying seeds, fertilizers, or emergency expenses, rather than for long-term investments in productive assets. This behaviour is driven by their lack of access to reliable and affordable credit, as well as fear of falling into unmanageable debt cycles.

Another critical characteristic of smallholder farmers' borrowing patterns is the type of credit sources they rely on. Due to their limited access to formal financial institutions, many smallholder farmers depend on informal sources such as local moneylenders, community savings groups, and family or friends for credit (Simelane et al., 2019). These informal sources often offer smaller loan amounts, flexible repayment terms, and fewer requirements, but at higher interest rates compared to formal credit institutions. For example, farmers in Uganda often join rotating savings and credit associations (ROSCAs), where they can access small loans based on their contributions. While informal credit sources play a crucial role in meeting the immediate needs of smallholder farmers, the limited loan sizes often restrict farmers' ability to make significant investments in farm productivity (Mukasa et al., 2017).

Collateral is another factor that influences the borrowing characteristics of smallholder farmers. Formal financial institutions typically require physical assets such as land, livestock, or property as collateral for loans, which many smallholder farmers lack (Akudugu et al., 2009). Studies have shown that the lack of ownership of productive assets is a significant barrier to accessing credit, particularly for women farmers (Awotide et al., 2019). As a result, smallholder farmers who do own collateral are more likely to borrow larger amounts from formal institutions, while those without collateral are either excluded from formal borrowing or forced to rely on informal lenders. In addition, the value of collateral offered by farmers often does not meet the thresholds required by banks, further limiting their borrowing capacity (B. B. Balana et al., 2022).

The repayment behaviour of smallholder farmers is also influenced by agricultural cycles and income patterns. Unlike other sectors with predictable income streams, smallholder farmers experience seasonal income fluctuations, which affect their ability to meet regular loan repayment

schedules (Waje, 2020). This cyclical nature of agricultural income makes it difficult for farmers to secure loans that do not accommodate flexible repayment terms. According to Waje, (2020), loan repayment defaults among smallholder farmers are common during periods of poor harvests or low market prices. As a result, financial institutions often perceive lending to smallholder farmers as risky, further constraining their access to credit.

2.3 Factors influencing borrowing decisions among smallholder farmers

The borrowing decisions of smallholder farmers are influenced by a range of economic, social, and institutional factors. One of the primary drivers is the need for agricultural inputs such as seeds, fertilizers, and tools to enhance productivity. Smallholder farmers often experience liquidity constraints, which prevent them from purchasing these inputs upfront, leading them to seek credit (Wahbi et al., 2023). According to Yehuala, (2008), the seasonal nature of farming in regions like Uganda, where farmers experience extended periods without income between planting and harvesting, creates a significant demand for credit to sustain farming activities. Consequently, farmers are more likely to borrow when they anticipate higher yields or favorable market conditions, which would allow them to repay loans more easily.

Access to financial institutions plays a critical role in shaping borrowing decisions. Proximity to banks, microfinance institutions, and savings cooperatives significantly increases the likelihood of smallholder farmers borrowing for agricultural purposes (Awotide et al., 2019). Farmers living in areas with dense networks of financial service providers are more informed about credit options and can choose between competitive interest rates, making them more likely to take out loans (Jost et al., 2016). In contrast, farmers in remote areas with limited access to financial services often rely on informal credit sources, which may offer less favourable terms but provide the immediacy

and flexibility that formal institutions lack (Cherotich et al., 2022). This disparity in access to financial institutions is a critical factor in shaping borrowing patterns among smallholder farmers.

Socio-demographic characteristics such as age, education, and gender also influence the borrowing decisions of smallholder farmers. Younger farmers are more likely to take risks and invest in loans to improve productivity, while older farmers tend to be more conservative, preferring to rely on savings or informal sources (Tsige et al., 2020). Education level is another important factor, as more educated farmers tend to have better financial literacy and a greater understanding of the benefits and risks associated with borrowing. This makes them more likely to seek credit from formal institutions (Ouattara et al., 2020). Gender plays a crucial role as well, with male farmers generally having better access to formal credit than female farmers due to cultural norms and asset ownership structures that favour men (Ankrah et al., 2020).

Risk perception is another significant driver of borrowing decisions among smallholder farmers. Agricultural production is inherently risky due to unpredictable factors such as weather variability, pests, and fluctuating market prices (Cherotich et al., 2022). Farmers who perceive a high level of risk are less likely to borrow, especially from formal institutions with strict repayment terms. Risk-averse farmers may prefer to rely on savings, informal loans, or government subsidies rather than take on formal debt (Balana et al., 2020). Conversely, farmers who have adopted risk mitigation strategies, such as crop insurance or diversified income sources, are more likely to borrow for investments aimed at increasing their productivity.

The interest rates and loan terms offered by financial institutions are also key determinants of borrowing decisions. High-interest rates, short repayment periods, and stringent collateral requirements deter many smallholder farmers from accessing formal credit (Ajadi et al., 2015).

Studies have shown that when interest rates are high, smallholder farmers tend to avoid borrowing from formal institutions, opting instead for informal credit arrangements, even though they may come with higher risks and less favourable repayment terms (Baiyegunhi & Fraser, 2014; Muhongayire, 2015). Flexible loan terms that consider the seasonal nature of agricultural production and provide grace periods for repayment can significantly influence farmers' willingness to borrow.

Furthermore, social capital and peer influence play a substantial role in the borrowing decisions of smallholder farmers. Farmers are more likely to borrow if they are part of community-based organizations, cooperatives, or informal savings groups where information about credit availability and financial literacy is shared (Baiyegunhi & Fraser, 2014). Social networks also provide moral and material support in times of financial difficulty, reducing the perceived risks of borrowing. Additionally, farmers who see their peers successfully borrow and repay loans are more likely to follow suit, believing that borrowing can lead to improved agricultural productivity and income (Anaglo et al., 2014). This sense of collective experience and support within farming communities is a powerful driver of borrowing decisions among smallholder farmers.

2.4 Factors affecting choice of source of borrowing among smallholder farmers

The choice of borrowing source among smallholder farmers is influenced by various socio-economic, institutional, and cultural factors. One key factor is access to information. Farmers who are more informed about available credit options are more likely to diversify their borrowing sources. In rural areas, limited access to information is often a significant barrier to financial inclusion, with many smallholder farmers relying on informal sources of borrowing, such as family and friends, due to their familiarity and ease of access (Oladapo, Ogundele & Badmus, 2020).

Studies also show that financial literacy enhances farmers' confidence in formal financial institutions, leading to a higher likelihood of borrowing from banks or microfinance institutions (Carranza & Niles, 2019).

The level of collateral required by different lending institutions also plays a crucial role in determining the choice of borrowing source. Formal institutions, such as commercial banks, often require tangible assets as collateral, which many smallholder farmers lack (Mulume Bonnke et al., 2022). As a result, farmers tend to seek loans from informal sources or microfinance institutions that have less stringent collateral requirements (Chandio et al., 2017). This inability to provide sufficient collateral significantly limits smallholder farmers' access to formal credit, pushing them toward more flexible, albeit sometimes more expensive, alternatives.

Interest rates and loan terms are additional factors influencing farmers' borrowing choices. Formal financial institutions tend to offer lower interest rates compared to informal lenders but may impose complex requirements that deter smallholder farmers (Dzadze et al., 2012; Jeiyol et al., 2013). In contrast, informal lenders or village savings groups may charge higher interest rates but provide faster loan processing and more flexible repayment schedules (Afari-Sefa et al., 2018). The trade-off between affordability and accessibility often drives farmers to opt for informal credit sources, particularly when faced with urgent financial needs such as purchasing inputs for the planting season.

The social and cultural environment also plays a role in the borrowing behaviours of smallholder farmers. In many communities, trust in informal lenders or savings groups is stronger due to long-established relationships and shared cultural practices (Mmasa, 2017). Social capital, defined by networks of trust and cooperation, is often a deciding factor when farmers choose informal credit

over formal options. Studies show that in rural settings, where formal institutions are scarce, social networks are critical for smallholder farmers to access credit without the bureaucratic challenges associated with formal lending (Sebatta et al., 2014).

Additionally, government policies and financial infrastructure influence smallholder farmers' choice of borrowing source. In areas where governments provide subsidies or guarantees for agricultural loans, farmers are more likely to use formal credit institutions (Dube et al., 2015). However, in regions with weak financial infrastructure, farmers may be forced to rely on informal credit, as formal institutions may not have a significant presence. Poor rural infrastructure often restricts farmers' access to formal financial services, reinforcing the importance of localized, informal sources of credit (Chenaa et al., 2018).

Gender plays a pivotal role in determining borrowing preferences among smallholder farmers. Studies indicate that female farmers are more likely to borrow from informal sources due to greater social constraints and lower financial literacy compared to their male counterparts (Jeiyol et al., 2013). Cultural barriers and gendered financial exclusion often lead women to rely on savings groups or family members, which offer more flexible terms and a sense of security compared to formal institutions (Ololade & Olagunju, 2013). The intersection of gender, cultural norms, and access to credit underscores the importance of designing inclusive financial systems that address these disparities.

2.5 Summary of Literature reviewed

The reviewed literature indicated that several studies have been done in relationship to credit access by the smallholder farmers. Most of these studies have focused on exploring supply and

demand functions of credit access. Despite the availability of agricultural credit, most smallholder farmers face barriers such as lack of collateral, high interest rates, and inadequate financial literacy, limiting their access to formal credit sources. Consequently, they rely heavily on informal sources like savings groups and moneylenders, which often have less favourable terms. Gender disparities are also evident, with women facing greater obstacles in accessing credit due to cultural norms and limited asset ownership. Factors such as geographical location, risk perception, and socio-demographic characteristics further influence borrowing decisions, with informal credit being more prevalent in rural areas. Emerging financial technologies, like mobile money, offer alternative credit access, though challenges persist. The literature underscores the influence of gender on key institutional and socio-economic factors that influence borrowing decisions among the smallholder farmers. This study aimed to address this gap. This helped to formulate strategies needed for inclusive financial systems that address gender disparities, enhance financial literacy, and accommodate the seasonal nature of agriculture.

CHAPTER THREE: METHODOLOGY

3.1 Study Area

The study was carried out in Amuru and Nwoya districts in Northern Uganda. Nwoya District is bordered by Amuru District to the north, Gulu District to the north-east, Oyam District to the east, Kiryandongo District to the south-east, Masindi District to the south, and Buliisa District to the south-west. Nwoya, the main political, administrative and commercial center in the district, is approximately 44 kilometres (27 mi) south-west of the city of Gulu, the largest metropolitan area in the sub-region. This location is approximately 330 kilometres (210 mi), by road, north of the city of Kampala, Uganda's capital and largest metropolitan area. Amuru District is bordered by Adjumani District to the north, South Sudan and Lamwo District to the northeast, Gulu District to the east, Nwoya District to the south, Nebbi District to the southwest and Arua District to the west. The administrative headquarters of the district at Amuru lies 60 kilometres (37 mi) northwest of Gulu, the largest city in the sub-region. Majority of the farmers in both Amuru and Nwoya district are smallholder farmers engaged in subsistence agriculture and livestock husbandry however, there exist a substantive gender disparity in access to finance among men and women in the two districts (Amuru District Physical Planning Office, 2020; Nwoya District Physical Planning Office, 2020). Figure 2 show the map of Amuru and Nwoya Districts

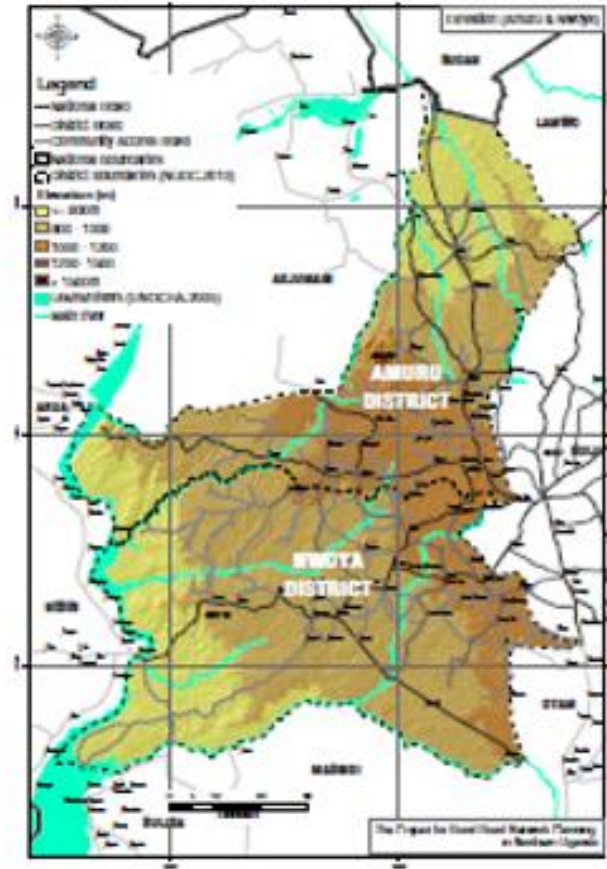


Figure 1: Map of Amuru and Nwoya districts

3.2. Study Design

The study adopted a cross-sectional study design and it was carried out between August 2022 and November 2022 to gather information from smallholder farmers in the study area. A semi-structured researcher administered questionnaire was used to gather information on demographics characteristics, and credit conditions. The cross-sectional study design is an observational study that analyses data collected at a specific point in time from the population or a sample of the population (Ahmadu & Idisi, 2014). The cross-sectional was the most appropriate study design since the data was collected in a short period of time. Several researchers have used this study design in a similar discipline or study (Masamha, 2018; Eriya, 2018)

3.3 Sample Size determination and Sampling Procedure

3.3.1 Sample size determination

To determine the sample size of the study, the Morgan table (Appendix VIII), as proposed by Krejcie and Morgan (1970), was employed as a valuable tool for estimating the required sample size. This method was chosen for its ability to systematically calculate a sample size that aligns with the desired level of confidence, margin of error, and the size of the target population. According to Krejcie and Morgan's seminal work, it is essential to ensure that a sample size is sufficiently large to yield results that can be generalized to the broader population accurately. The Morgan table, in this particular study, yielded an estimated sample size of 210 respondents. However, to account for potential non-responses, additional 13 respondents were included in the sample. This additional number is consistent with the recommendations by Krejcie and Morgan (1970), who emphasize the importance of considering potential non-responses or incomplete data when determining sample size. In total 223 respondents were considered for this study. By adhering to their guidelines, this research aimed to enhance the credibility and representativeness of its findings while maintaining methodological rigor and a comprehensive approach to sample size determination (Krejcie & Morgan, 1970).

3.3.2 Sampling Procedure

A multi stage sampling procedure was used to select the study respondents. In the first stage, the Amuru and Nwoya were sampled. Two sub-counties (Alero and Lukayi from Nwoya and Lamogi and Pabbo from Amuru) were randomly sampled from each district in the second sampling stage. In the third stage, one Non-Governmental Organisation (NGO) that is Caritas - Gulu Diocese was purposely sampled. The NGO was purposely sampled on grounds that they have been doing financial linkage of farmer groups from the two districts to financial institutions to enable them

access financial services. A database of farmer groups that had been supported to access agricultural credit was obtained from the organisation. It is from this database that systemic random sampling was used to select respondents who participated in this study. The first step was that, after getting a list of participants from the farmer groups, a number was assigned to every member of the sample. Random sampling was opted for because of its simplicity in collecting data as well as minimising bias by offering equal opportunity to all members of the population in being selected to take part in the study.

3.4 Data Collection

Data was collected from individual farmers who were representatives of their households. 20 questionnaires were initially pre-tested in Omoro district before commencement of the data collection. After pre-testing of the questionnaires, modification was made on it to ensure its appropriateness, clarity, relevance and reliability of the questions, to both the researcher and the respondent. Research assistants were locally hired and trained to have a clear understanding of the variables of interest as well as validation of the questions. Research assistants were trained on data enumeration processes that were used in collecting data and the manners that were followed when posing questions to the respondents.

Both open and closed-ended questions were included in the questionnaire and this was necessary to help in obtaining the data necessary to study the research objectives. The closed ended questions were of two types namely: The Likert-scale data, which provided the respondents with only five options (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree) to make choice on answers that best describe the respondent's situation for a particular question. The second type of questions were the dummies and other multiple-choice questions. The open-ended

questions were used to capture qualitative data that was used to explain and complement quantitative data. The questionnaire was structured into three (3) sections. Each section was used to collect data relevant to one study objective. The first section captured demographic characteristics such as sex of the respondent, age in years, education level attained, farm size, nature of farming activity, years of farming experience, marital status, relationship to the household head, household size. Section two focused on decision making especially with regards to Agricultural credit access, use and repayment. A sample of questions asked in line with this objective included: Please, rate the level participation of both male and female in decisions about credit source, appropriation and repayment. Use a scale of 1-5 where; 1= no participation, 2= low participation, 3= moderate participation, 4 = regular participation, 5= very regular participation. Section three focused on capturing institutional attributes which are expected to influence credit uptake by the farming household. These attributes include interest rate, loan duration, banking history and guarantor requirements. An example of a question under this section was; Please read each item carefully and indicate your agreement or disagreement by ticking the response that best explains your perception: For the previous year, did your household borrow from any source? If yes, what was your source of credit? How much credit did you borrow?

3.6 Data Analysis

The data collected was edited, coded, and cleaned to ensure consistency, uniformity, and accuracy. Data was entered into the statistical package for social scientists (SPSS V₂₀) for analysis, and STATA V₁₅. The statistical packages chosen made the analysis neat and precise (Chisasa, 2019). Descriptive statistics such as means, standard deviations, percentages and frequencies were

performed as a way of exploring the data. Econometric analysis was later performed following the research objectives.

3.6.1 Borrowing characteristics of smallholder farmers

To address this objective, descriptive statistics including the mean, frequency, percentages and standard deviations were used. Independent student t-test was used to compare the means of the socio-economic characteristics of the smallholder farmers between borrowers and non-borrowers. The Chi-square test was used test for association between socio-economic characteristics of the smallholder farmers and borrowing.

3.6.2 Drivers of borrowing decision among smallholder farmers

The study used the binary logistic regression model to assess the drivers of borrowing decision among smallholder farmer (Adigun, 2022; Afari-Sefa et al., 2018; Chisasa, 2019). The choice of binary logistic regression model was based on the fact that the dependent variable is binary, captured as either borrowed = 1; otherwise = 0. Binary logistic regression is appropriate for modelling binary outcomes, as it estimates the probability that an event i.e. borrowing occurs. The regression model is specified as shown in equation (1);

$$Y_i = \beta_0 + \beta_i X_i + \varepsilon_i \quad (1)$$

Where;

Y_i is an unobserved latent variable representing decision to borrow i.e. dummy variable where borrowers are denoted by 1 and 0 if otherwise.

X_i is a vector of explanatory variables: sex of household head, repayment duration (less than one year), repayment schedule (one-off), collateral requirement, insurance premium, credit approval history, interest amount, number of workers, farming experience, credit source microfinance institution, credit source VSLA and marital status.

β_i is a vector of parameters to be estimated

ε_i is an error term distributed with mean 0 and variance 1

Detailed description and measurement of these variables are used in the presented in Table 3.1.

Table 3.1 Variables used in the binary logistic regression model

Variables	Description	Apriori Sign
Sex of household head	Dummy: Female = 1, Male = 0	+
Repayment duration (less than one year)	Dummy: Yes = 1, No = 0	+/-
Repayment schedule (one-off)	Dummy: Yes = 1, No = 0	+
Collateral requirement	Dummy: Yes = 1, No = 0	+
Insurance premium	Dummy: Yes = 1, No = 0	+/-
Credit approval history	Dummy: Yes = 1, No = 0	-
Interest amount	Amount of interest charged on loan in Uganda shillings	+/-
Number of workers	Count of workers working on farm	+
Farming experience	Farming experience in years	+/-
Marital status	Dummy: Married = 1, Not Married = 0	-
Credit source microfinance institution	Dummy: Yes = 1, No = 0	+/-
Credit source VSLA	Dummy: Yes = 1, No = 0	+/-
Interaction Sex of HHH and Credit duration (less than a year)		+
Interaction Sex of HHH and Interest amount		-

3.6.3 Factors influencing choice of source of borrowing among smallholder farmers.

To determine the factors influencing choice of source of borrowing, the dependent variable was arranged categorically into four categories of sources of borrowing (Argaw-Gizachew, 2017; Lemessa & Gemechu, 2016). These were; “Family/Friend” (Reference category), “Bank”, “VSLA”

and “Microfinance Institution”. Given the fact that the dependent variable was categorical and the based on four categories, the multinomial logit (ML) regression model was preferred for the analysis as shown in equation (2).

The model is specified as;

$$Y_i^* = \beta_0 + \beta_i X_i + \cdots + \beta_n X_n + \mu_i \quad 3$$

Where Y_i^* is the choice of source of borrowing i.e., “Family/friend” (Reference category), “Bank”, “Microfinance institution”, and “VSLA”, β_0 – regression intercept estimates, β_i – coefficient of regression model estimates, X_i – explanatory variables influencing choice of source of borrowing such Sex of HHH, Credit duration (less than a year), Credit amount, Collateral requirement, Borrowing, Credit History, Interest amount, Farming experience, Participation of female spouse in credit application, Education Level – Male spouse (tertiary), Education Level - Male spouse (secondary), Years of relations, and μ_i – error term. The apriori sign expectations for the regression in equation (3) above are as presented in Table 3.2

Table 3.2: Variables used in multinomial regression model

Variables	Description	Apriori Sign
Sex of HHH		-
Credit duration (less than a year)	Dummy: Yes = 1, No = 0	+/-
Credit amount	Amount of credit taken by farmer in Uganda shillings	+
Collateral requirement	Dummy: Yes = 1, No = 0	-
Borrowing	Dummy: Yes = 1, No = 0	+/-
Credit History	Dummy: Yes = 1, No = 0	+/-
Interest amount	Amount of interest charged in Uganda shillings	+/-
Farming experience	Farming experience in years	
Participation of female spouse in credit application	Dummy: Yes = 1, No = 0	+/-
Education Level-Male spouse (tertiary)	Dummy: Yes = 1, No = 0	+/-
Education Level- Male spouse (secondary)	Dummy: Yes = 1, No = 0	+/-
Years of relations	Years of relationship with financial institution	+/-
Interaction Sex of HHH and Credit duration (less than a year)		+
Interaction Sex of HHH and Interest amount		+

3.7 Ethical Consideration

The study observed all the laws of the country and demonstrated high level of integrity without any form of compromise. The researcher sought ethical clearance from the Gulu University Research and Ethics Committee (GUREC) (Appendix II). The study also sought authorization from relevant offices such as Gulu City Town Clerk and Division Assistant Clerks as well as informed consent from the research participants. The respondents were asked before interviewing them and further be requested to agree to participate by signing the consent form and be interviewed. To achieve privacy, and confidentiality, the researcher abided by the principle of voluntarism and maintained the highest level of confidentiality of the respondent's details. The researcher observed the COVID-19 prevention guidelines by ensuring that at all times there was hand sanitizing, wearing of face masks and social distancing while conducting interviews with the respondents.

CHAPTER FOUR: PRESENTATION OF RESULTS

4.1: Characteristics of smallholder farmers

Table 4.1 findings indicate that the majority (63.7%) of the smallholder farmers were married. This was followed by those who were single (15.2%), separated (13.9%), divorced (5.8%) and widowed (1.3%). The chi-square test results showed a statistically significant association between marital status and borrowing among smallholder farmers.

Regarding the sex of the household head, majority sampled of smallholder farmers (51.1%) of the were female-headed households. By age, more than half (52.0%) of the household heads were aged 36 years and above. Concerning education, most (34.1%) of the smallholder farmers had primary education. This was followed by those who had secondary education (33.2%), Tertiary (31.4%), and non-formal education (1.3%). Regarding engagement in non-farming activities, the majority (82.1%) of the smallholder farmers were engaged in non-farming activities. The chi-square test results showed no statistically significant association between borrowing among smallholder farmers and sex of household head, age of household head, education of household head, and engagement in non-farming activities.

Table 4.1: Chi-square test for association between socio-economic characteristics and borrower characteristics

Frequency (Percentage)				
	Non-Borrowers n = 77	Borrowers n = 146	Overall n = 223	Chi2
Sex of household head				
Male	37(48.1)	72(49.3)	109(48.9)	0.03
Female	40(51.9)	74(50.7)	114(51.1)	
Age of household head				
18-35 years	42(54.5)	65(44.5)	107(48.0)	2.03
36 years and above	35(45.5)	81(55.5)	116(52.0)	
Education				
Non-Formal	1(1.3)	2(1.4)	3(1.3)	2.91
Primary	22(28.6)	54(37.0)	76(34.1)	
Secondary	31(40.3)	43(29.5)	74(33.2)	
University	23(29.9)	47(32.2)	70(31.4)	
Non-Farming Activity				
Yes	65(84.4)	118(80.8)	183(82.1)	0.44
No	12(15.6)	28(19.2)	40(17.9)	
Marital Status				
Single	13(16.9)	21(14.4)	34(15.2)	10.25**
Married	54(70.1)	88(60.3)	142(63.7)	
Divorced	0(0.0)	13(8.9)	13(5.8)	
Separated	8(13.9)	23(15.8)	31(13.9)	
Widowed	2(1.3)	1(0.7)	3(1.3)	
Source: Field Data (2020) *** p<0.01, ** p<0.05, * p<0.1				

The findings in Table 4.2 reveals that the means of household size, farming experience and years of relations with financial institution were 5.17 persons, 10.90 years, and 5.37 years respective. The t-test results indicated that there were no statistically significant differences in the mean household size, years of farming experience and years of relations with financial institution between the borrowers and non-borrowers.

Table 4.2: T-test for mean differences between socioeconomic characteristics and borrower characteristics

Variables	Non-Borrowers n = 77	Borrowers n = 146	Overall n = 223	Mean Difference	t-value
Household size	5.14(2.04)	5.17(1.78)	5.17(0.13)	-0.04	0.13
Farming experience	9.77(7.44)	11.50(8.33)	10.90(0.54)	-1.73	1.53
Years of relations	5.68(5.28)	5.21(5.81)	5.37(0.29)	0.47	0.76
Source: Field Data (2020) *** p<0.01, ** p<0.05, * p<0.1					

4.2: Factors affecting borrowing decision among smallholder farmers

Findings in Table 4.3 indicate that most (65%) of the smallholder farmers had borrowed in the past year.

Table 4.3: Borrowing among smallholder farmers

Borrowed	Frequency	Percent
No	77	35
Yes	146	65
Total	223	100

The results of the binary logistic regression concerning the drivers of borrowing decisions among smallholder farmers are presented in Table 4.4. The findings indicate a significant log likelihood ratio ($p<0.000$) for the empirical model on borrowing decision (-106.56) suggesting that the empirical data fitted well the estimation model. The R^2 for model 0.258 suggests that the specified factors in the model explain 25.8% of the total variation in each borrowing decision among smallholder farmers. On the basis of the R^2 and the log likelihood ratio, the assumption that the empirical data fitted well the estimation model was confirmed.

Findings in Table 4.4 reveal that the sex of household head ($p<0.01$), one-off repayment schedule ($p<0.1$), collateral requirement ($p<0.05$), number of farm labour ($p<0.1$), and interaction of sex of

household head and microfinance source of credit ($p<0.05$) positively and significantly influence borrowing decisions among smallholder farmers. On the contrary, credit approval history ($p<0.05$), marital status ($p<0.01$), and interaction of sex of household and interest amount ($p<0.01$) negatively and significantly influenced borrowing decisions among smallholder farmers.

Table 4.4: Factors affecting borrowing decisions among smallholder farmers

Variables	Coef. (SE)	Marginal Effect (SE)
Sex of HHH	8.96(3.29) ***	0.087(0.079)
Repayment Duration (less than a year)	-0.07(0.55)	-0.015(0.112)
Repayment Schedule-one-off	0.73(0.40) *	0.149(0.080)
Collateral Requirement	2.10(0.91) **	0.480(0.179)
Insurance Premium	0.85(0.52)	0.189(0.121)
Credit Approval History	-1.00(0.47) **	-0.181(0.079)
Interest amount	0.01(0.19)	0.001(0.002)
Number of workers	1.09(0.58) *	0.011(0.006)
Farming Experience	0.38(0.29)	0.004(0.003)
Credit source Microfinance Institution	0.77(0.56)	0.324(0.075)
Credit source VSLA	0.59(0.47)	0.120(0.094)
Marital Status	-0.83(0.28) ***	-0.008(0.003)
Interaction Sex of HHH and Credit source Microfinance Institution	2.14(0.97) **	
Interaction Sex of HHH and Interest Amount	-0.78(0.28) ***	
Constant	-4.47(2.52) *	
Log-likelihood	-106.56	
LR Chi2	74.32	
Prob<chi2	0.000	
Pseudo R ²	0.258	
Number of observations	223	
Source: Field Data (2020) *** $p<0.01$, ** $p<0.05$, * $p<0.1$		

Less than a year repayment duration, insurance premium, years of farming experience, source of credit being microfinance, and source of credit being VSLA did not post a significant influence on the borrowing decision among smallholder farmers.

4.4: Factors influencing choice of borrowing sources among smallholder farmers

Findings in Table 4.5 reveal that most (41.8%) of the smallholder farmers borrowed from VSLA.

This was followed by those who borrowed from microfinance institutions (29.5%), Family/Friends (18.5%) and bank (10.3%).

Table 4.5: Sources of borrowing among smallholder farmers

Source of Borrowing	Frequency	Percent
Bank	15	10.3
Microfinance Institution	43	29.5
VSLA	61	41.8
Family/Friends	27	18.5
Total	146	100.0

The results of multinomial logit regression concerning the choice borrowing sources among smallholder farmers are in Table 4.6. The “Friend/Family” category was considered the base outcome (reference category) for comparing choice of borrowing sources among smallholder farmers. Based on the results of the multinomial logit analysis, the loglikelihood ratio (132.51) was significant. This implied that the empirical model specification in this study exhibited a good fit for the multinomial logit model. Additionally, the log-likelihood value of (-191.96) was adequate meaning that the specified model yields coefficients that represent the population parameter thus suggesting that the explanatory variables selected for the study constitute the factors influencing choice of borrowing sources among smallholder farmers. Furthermore, the pseudo- R^2 value of 0.256 reveals that the model had a satisfactory predictive ability of approximately 25.6% in explaining the variation in the credit conditions hindering borrowing by smallholder farmers.

Furthermore, results in Table 4.6 indicate that sex of HH ($p<0.01$), credit history ($p<0.01$), interest amount ($p<0.05$), and participation of female spouse in credit application ($p<0.1$) have a negative and significant influence on choice of VSLA. Surprisingly, credit amount ($p<0.05$), the interaction variable between sex and credit duration of less than a year ($p<0.1$), and the interaction variable

between sex and interest amount ($p < 0.01$) posted a positive and significant influence of the choice of VSLA. For Friends/family; collateral requirements ($p < 0.05$), borrowing ($p < 0.1$) and credit history ($p < 0.1$) posted a negative and significant influence on the choice of Family/friends. Interestingly, only interest amount ($p < 0.01$) had a positive and significant influence on the choice of Family/friends. For bank; only credit history ($p < 0.05$) positively and significantly influences the smallholder's choice of bank. Regarding microfinance; credit approval history ($p < 0.1$) and interest amount ($p < 0.1$) posted a positive and significant influence on the choice of microfinance institutions as a borrowing source.

In terms of the marginal effects, microfinance institutions as a source of credit borrowing reveal a credit duration being less than a year increase the likelihood of choice of microfinance as a borrowing source by 18.9% compared to the reference category Family/friends. On the other hand, credit duration less than a year lowers the likelihood of choosing VSLA as a borrowing source by 28.8% compared to the reference category Family/friends. Additionally, years of farming experience increases the likelihood of choice of microfinance institution 8.5% compared to the reference category Family/friends. Surprisingly years of farming experiences lowers the likelihood of choosing VSLA by 17.5% compared to the reference category. Credit approval history increased the likelihood of choosing microfinance institution by 4.6% compared to the reference category Family/friends. Findings further show that tertiary education qualification of male spouse decreases the likelihood of choosing VSLA by 14.0% compared to the reference category Family/friends.

Table 4.6: Factors influencing choice of borrowing sources among smallholder farmers

Variables	Friend/Family	Bank		Microfinance		VSLA	
	Coef. (SE)	Coef. (SE)	Margins (SE)	Coef. (SE)	Margins (SE)	Coef. (SE)	Margins (SE)
Sex of HHH	1.37(2.23)	-0.78(6.81)	-0.002(0.05)	-2.51(4.99)	0.01(0.06)	-3.20(1.16) ***	0.01(0.06)
Credit duration (less than a year)	0.40(0.46)	-0.17(1.41)	-0.02(0.06)	-0.02(1.02)	0.18(0.09)	-0.06(0.47)	-0.29(0.08)
Credit amount	-0.15(0.21)	0.56(0.54)	0.03(0.04)	0.40(0.42)	0.05(0.05)	4.07(1.64) **	-0.05(0.05)
Collateral requirement	-1.53(0.70) **	13.74(751.95)	0.99(62.44)	1.44(1.45)	-0.54(28.86)	0.72(0.53)	0.13(18.45)
Borrowing	-0.44(0.24) *	1.04(0.66)	0.04(0.05)	0.85(0.50) *	0.05(0.07)	0.22(0.57)	0.02(0.06)
Credit Approval History	-0.47(0.27) *	2.34(1.16) **	0.15(0.09)	0.99(0.58) *	0.06(0.08)	-1.71(0.57) ***	-0.09(0.07)
Interest amount	0.43(0.21) **	-0.43(0.57)	0.01(0.03)	-0.23(0.42)	0.07(0.05)	-1.16(0.56) **	-0.15(0.05)
Farming experience	0.22(0.26)	0.01(.71)	0.02(0.05)	0.31(0.53)	0.12(0.07)	-0.11(0.22)	-0.18(0.06)
Participation of female spouse in credit application	0.10(0.10)	0.09(0.28)	0.02(0.02)	-0.31(0.21)	-0.05(0.02)	-1.01(0.57) *	0.001(0.02)
Education Level-Male (tertiary)	0.22(0.25)	-0.16(0.65)	0.02(0.05)	0.11(0.51)	0.09(0.07)	-0.61(0.52)	-0.14(0.06)
Education Level-spouse (secondary)	0.15(0.24)	-0.09(0.62)	0.01(0.04)	-0.11(0.48)	0.02(0.06)	0.84(0.62)	-0.07(0.06)
Years of relations	-0.16(0.28)	-0.46(0.76)	-0.07(0.05)	0.33(0.55)	0.02(0.07)	1.63(1.50)	0.10(0.07)
Interaction Sex of HHH and Credit duration (less than a year)	0.02(0.65)	-1.27(1.84)		0.16(1.40)		0.87(0.49) *	
Interaction Sex of HHH and Interest amount	-0.12(0.17)	0.16(0.51)		0.20(0.38)		21.88(0.99) ***	
Constant	-2.97(2.11)	-		-5.39(4.85)		-3.20(1.16) ***	
Log-likelihood	-191.96	19.04(751.97)					
LR Chi2	132.51						
Prob<chi2	0.000						
Pseudo R ²	0.256						
Source: Field Data (2020) *** p<0.01, ** p<0.05, * p<0.1							

CHAPTER FIVE: DISCUSSION OF RESULTS

5.1 Borrowing characteristics of smallholder farmers

The study findings indicated most of the smallholder farmers were married. This implies that married couples are more likely to borrow compared to their counterparts who are single, divorced or widowed. The significant association between marital status and borrowing could be attributed to the fact that married couples might jointly own assets (like land or livestock), which can be used as collateral for loans, increasing their chances of securing credit. This finding is in line with the findings of (Olumeh et al., 2018) who revealed that majority of the smallholder farmers were married.

5.2 Drivers of borrowing decision among smallholder farmers

Findings reveal that sex of household head positively and significantly influenced borrowing decision among smallholder farmers. This implies that female household heads were associated with increased borrowing among smallholder farmers. Many microfinance institutions and lending programs target women, offering them credit opportunities that they might not have had otherwise. This is often due to the belief that women are more responsible borrowers, leading to higher loan uptake among female-headed households. The study finding aligns with the findings of (Mahasha et al., 2022).

Similarly, study findings indicate that one-off repayment schedule had a positive and significant influence on borrowing decision among smallholder farmers. This indicates that one-off repayment schedule is associated increased likelihood of borrowing among smallholder farmers. Smallholder

farmers often have irregular income, with large sums of money coming in after harvest seasons. A one-off repayment schedule allows them to repay the loan when they have cash on hand after selling their crops, rather than struggling with monthly or periodic payments when cash flow is limited. The study finding agrees with the findings of (Deresse & Zerihun, 2018).

Furthermore, the study findings show that collateral requirement had a positive and significant effect on the borrowing decision among smallholder farmers. Collateral requirements often align with formal financial institutions' lending policies. Farmers with collateral might gain access to more formal, structured loans from banks or microfinance institutions, which might offer better terms and greater financial support compared to informal sources. The study finding is contrary to the findings of (Argaw-Gizachew, 2017), that revealed that collateral requirements discourage borrowing among smallholders since they do not have the assets they could use as collateral.

Interestingly, number of workers had a positive and significant influence on borrowing decision among smallholder farmers. Farmers with more workers may require more capital to invest in farm inputs such as seeds, fertilizers, irrigation systems, and machinery to support the labour force. The need for higher productivity and better inputs may encourage them to borrow to maximize the potential of their workforce. Study finding is in alignment with to the finding of (Simonyan et al., 2019).

An interaction between sex of household head and microfinance source of credit was associated with borrowing among smallholder farmers. The finding suggests that female household heads using microfinance as a borrowing source had higher chances of borrowing. Microfinance institutions often provide loan products that are specifically tailored to meet the needs of women, including flexible repayment schedules, lower collateral requirements, and smaller loan sizes.

These features make borrowing more attractive and accessible for female-headed households, encouraging them to take loans. The study finding agrees with the finding of (Obisesan, 2013).

Surprisingly, credit approval history negatively and significantly influenced borrowing decision among smallholder farmers. The finding signifies that credit approval history is associated with reduced likelihood of borrowing among smallholder farmers. Farmers with prior credit approvals may have encountered high interest rates, hidden fees, or unfavorable repayment conditions in their previous borrowing experience. Negative experiences with loan terms can discourage them from borrowing again, even if they are eligible for new loans. The study finding disagree with the finding of (Kiplimo et al., 2015) that revealed that a track record of successfully repaying loans often builds trust between lenders and farmers, increasing the chances of credit access and loan approvals. Lenders are more willing to provide additional loans to borrowers with good repayment histories, which can boost confidence in borrowing again.

Additionally, marital status had a negative and significant influence on borrowing decision among smallholder farmers. This implies that being married is associated with lower chances of borrowing. Married farmers may be more concerned about the risk of losing family assets (e.g., land or property) that are often jointly owned. The fear of jeopardizing family stability if the loan cannot be repaid might deter them from borrowing, particularly if the consequences affect their family's well-being. The study finding is contrary to the finding of (Sanka & Nkilikiwa, 2021) that found out that marital status is often associated with increased social capital, which can improve access to both formal and informal credit markets. Married farmers may benefit from stronger community ties and social networks that facilitate borrowing through trust-based lending systems.

An interaction of female sex of household head and interest amount was associated less likelihood of borrowing among smallholder farmers. The finding indicates that female household heads borrowing at high interest amount were less likely to borrow. Female household heads are often more risk-averse than their male counterparts, especially when it comes to financial decisions. High-interest rates increase the perceived risk of borrowing, making women less likely to take loans due to concerns about repayment difficulties and the potential loss of assets, which can disproportionately affect family well-being. The study finding agrees with the finding of (Musabanganji et al., 2016).

5.3 Factors influencing choice of borrowing source among smallholder farmers

Study findings revealed that female household head was associated with reduced likelihood of choosing of VSLA compared to the reference category of Family/Friends. Women may perceive VSLAs as less flexible in terms of loan amounts, repayment schedules, or eligibility criteria compared to other sources of credit. As such they feel that the VSLAs do not meet their specific financial needs, they may choose alternative borrowing options. The study finding is contrary to the finding of (Agbo et al., 2015) that found out that many VSLAs adapt their policies to meet the needs of their members, including female heads of households. This adaptability encourages women to use VSLAs as a reliable source of borrowing.

Interestingly, credit amount was found to be associated with increased likelihood of choosing VSLA compared to the reference category of Family/Friend. VSLAs often charge lower interest rates compared to traditional lenders. As the amount of credit increases, the relative cost of borrowing may still remain favourable within a VSLA context. This makes larger loans from

VSLAs more attractive compared to higher-cost alternatives, encouraging farmers to opt for VSLAs. The finding aligns with the finding of (Isaga, 2018).

Borrowing was found to be associated with increased likelihood of choosing Bank compared to the reference category of Family/Friend. Banks often offer loans that are more suitable for larger investments and business expansion. Smallholder farmers seeking to grow their agricultural enterprises may turn to banks for loans that allow for significant investments in land, machinery, or technology, which informal sources may not support. The finding corroborates with the finding of (Motsoari et al., 2015).

Furthermore, credit history approval was found to be associated increased likelihood of choosing bank and microfinance institution compared to the reference category of Family/Friends. Conversely, study finding showed that credit approval history was associated with reduced likelihood of choosing VSLA compared to the reference category of Family/Friends. VSLAs typically impose limits on the amount a member can borrow, based on the group's collective savings. Farmers with a good credit history who need larger or more flexible loans may be drawn to formal financial institutions such as banks and microfinance institutions, which offer higher credit limits and greater flexibility in loan use and repayment. The study finding is corresponding with the finding of (Jost et al., 2016).

Study finding indicated that interest amount was associated with reduced likelihood of taking VSLA compared to the reference category of Family/Friends. VSLAs are member-driven and often have fixed or group-determined interest rates, which can be inflexible. Smallholder farmers, particularly those who are aware of and have access to formal credit sources, may find it difficult to negotiate lower interest rates within a VSLA. This lack of flexibility may discourage borrowing

from VSLAs when the interest rates are perceived as high. The study finding correlates with the findings of (Akudugu et al., 2009).

Findings also revealed that interaction of female sex of household head and less than one year credit duration was associated with an increased likelihood of selecting VSLA relative to the reference category of Family/Friends. Borrowing for less than one year presents lower financial risks, especially for female-headed households that may have limited income streams or savings. VSLAs offer shorter repayment periods with manageable loan amounts, making them a safer borrowing option for women who may want to avoid the long-term financial burden associated with loans from formal institutions like banks or MFIs. Finding is tandem to the finding of (Ankrah et al., 2020).

Relatedly, interaction of female sex of household head and interest amount was found to be associated with increased likelihood of opting for VSLA compared to the reference category of Family/Friends. Female-headed households may perceive the interest rates in VSLAs as more affordable or manageable compared to formal financial institutions. VSLAs often charge lower or more flexible interest rates, and the interest is often retained within the group to benefit the members. This sense of community-driven financial management, combined with the possibility of earning dividends from the interest, makes borrowing from VSLAs more attractive to women, especially when they are concerned about interest costs. The finding is in line with the finding of (Wahbi et al., 2023).

CHAPTER SIX: CONCLUSION, RECOMMENDATIONS

6.1 Conclusion

This study was on borrowing decisions and choice of source of agricultural credit among smallholder farmers in Northern Uganda. Specifically, the study established the borrowing characteristics of SHF, assessed the drivers of borrowing decisions among SHF and examined the factors influencing the choice of source of borrowing among SHF.

The findings showed that there was a statistically significant association between marital status and borrowing. It can be concluded that marital status varies greatly between borrowers and non-borrowers among smallholder farmers.

Among the drivers of borrowing decisions, sex of household head, one-off repayment schedule, collateral requirement, number of farm labour, and interaction of sex of household head and microfinance source of credit positively and significantly influenced borrowing decision among smallholder farmers. On the contrary, credit approval history, marital status, and interaction of sex of household and interest amount negatively and significantly influenced borrowing decisions among smallholder farmers. It can therefore be concluded that sex of household head, one-off repayment schedule, collateral requirement, number of farm labour, and interaction of sex of household head and microfinance source of credit, credit approval history, marital status, and interaction of sex of household and interest amount influence borrowing decisions among smallholder farmers.

The study revealed that decisions on different sources of credit were influenced in various ways by different factors. Sex of HH, credit approval history, interest amount, and participation of

female spouse in credit application have a negative and significant influence on choice of VSLA. Surprisingly, credit amount, the interaction variable between sex and credit duration of less than a year, and the interaction variable between sex and interest amount posted a positive and significant influence of the choice of VSLA. For Friends/family; collateral requirements, borrowing and credit approval history posted a negative and significant influence on the choice of Family/friends. Interestingly, only interest amount had a positive and significant influence on the choice of Family/friends. For bank; only credit history positively and significantly influences the smallholder's choice of bank. Regarding microfinance; credit approval history and interest amount posted a positive and significant influence on the choice of microfinance institutions as a borrowing source. It can therefore be concluded that sex of HH, credit approval history, interest amount, and participation of female spouse in credit application, credit amount, collateral requirements, borrowing significantly influences choice of borrowing sources among smallholder farmers.

6.2 Recommendations

First, targeted financial literacy programs should be introduced to increase awareness and understanding of credit products, particularly among older farmers and those with limited formal education. This initiative would help bridge the knowledge gap that hinders non-borrowers from accessing credit. Furthermore, agricultural training programs could be integrated with financial education, emphasizing the importance of credit for agricultural expansion and modernization, thereby encouraging more informed borrowing decisions among smallholder farmers.

Secondly, financial institutions should consider revising credit conditions to be more farmer-friendly, particularly addressing the issues of collateral requirements and repayment schedules.

Introducing flexible repayment terms aligned with the seasonality of agricultural incomes, such as instalment-based or post-harvest repayment options, would make credit more accessible. Additionally, the use of alternative collateral, like group guarantees or crop-based collateral, could reduce credit access barriers for farmers who lack traditional assets such as land. Microfinance institutions, in particular, should focus on tailoring products that meet the specific needs of smallholder farmers to increase their uptake.

Lastly, enhancing gender-sensitive credit policies should be prioritized to ensure equitable access for female farmers. Although the study found minimal gender differences in borrowing behavior, further progress can be made by expanding group-based lending models such as Village Savings and Loan Associations (VSLAs), which have proven effective in empowering women financially. Programs aimed at supporting women in asset acquisition and management, coupled with dedicated credit schemes for female farmers, would contribute to reducing the gender disparities in agricultural credit uptake and foster a more inclusive financial environment in the Acholi sub-region.

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APPENDICES

Appendix I: Questionnaire for smallholder farmers

Date of interview.....

Research Brief

My name is from Gulu University. I am conducting research on gendered participation in intra-household decisions for Agricultural credit in Acholi Sub-region. The findings of the study will be used for academic purposes only and will be treated confidentially. You have been selected as a respondent in this research. I therefore, request you to participate in this study. Thank you very much in advance for accepting to take part in this research.

Section A: Household Social demographics

Instruction: Please indicate by ticking in the boxes provided all the appropriate responses to the questions asked

1. Please indicate your gender: Male ☐ Female ☐
2. What is your marital status?
Single ☐ Married ☐ Divorced ☐ Separated ☐ Widowed ☐
3. Are you the household head?
Yes No ☐
4. If no, what is your relationship with the household head?
Son ☐ Daughter ☐ Wife ☐ Cousin ☐ Nephew ☐ Niece ☐
other (specify).....
5. Please indicate your age group and that of your spouse

Category	Below 18 years	18-35	Above 35 years
HH head			
Spouse			

6. Please indicate by ticking your highest level of education and that of your spouse

Category	No formal educ.	Lower primary (P1-P4)	Upper primary (P5-P7)	Lower secondary (S1-S4)	Upper secondary (S5-S6)	College level	University degree	Others (specify)
HH head								
Spouse								

7. Are you or your spouse engaged in any non-farm employment? Tick where appropriate

Category	Government employee	NGO worker	Self employed	Other (Specify)
HH head				
Spouse				

8. Household composition and farm input supply

What is the number of people that have lived in your household for the last 2 years? *(Please, record each member's, gender, and share your thought on each member's contribution to farm inputs).*

Total membership of Household	Sex		How many contribute to farm labour		How many contribute money used to buy other inputs	
	Male	Female	Male	Female	Male	Female

9. For how many years have you been in farming?

.....

10. For how long have you been in relationship with a financial institution?

.....

Section B: Gender Power relations

The table below indicates the level of gendered participation in your household decision making with respect to credit source, credit appropriation and credit repayment. Please, rate the level participation of both male and female in decisions about credit source, appropriation and

repayment. Use a scale of 1-5 where; 1= no participation, 2= low participation participation, 3= moderate participation, 4 = regular participation, 5= very regular participation. *(Adapted with modifications from Maxwell D. et al 2012, 2013; FAO 2013, 2017).*

Indicators	Use a scale of 1-5 points for level of participation for categories below		
	Male	Female	Joint
Decisions on Credit purpose			
1. Meeting recurrent financial needs for farming activities e.g. labour			
2. Purchase farm inputs e.g. agro-chemicals, seeds			
3. Invest in long-term assets e.g. land, ox-ploughs			
4. Home consumptions			
5. Paying schools fees			
Decisions on Credit details			
6. Source of credit e.g. banks, friends			
7. Amount to borrow			
8. Timing of borrowing			
9. Negotiating for interest terms			
Decisions on Credit appropriation			
1. Deciding how much to spend on activities			
2. Deciding when to spend			
3. Deciding who spends			
Decisions on Credit repayment			
1. Collecting money for credit payment			
2. Deciding time regularity of credit repayment			
3. Negotiating grace period to start repayment			

SECTION C: CREDIT CONDITIONS

Please read each item carefully and indicate your agreement or disagreement by ticking the response that best explains your perception

C.1. Borrowing history

1. For the previous year, did your household borrow from any source?

Yes ☐ No ☐

2. If yes, what was your source of credit?

Bank ☐ Microfinance institution ☐ VSLA ☐ Friend/relative ☐

3. How much credit did you borrow?

.....

4. What was the interest amount?

.....

C.2. Credit repayment

5. How long were you required to repay back the credit taken?

Less than 1 year ☐ 1 year ☐ Above 1 year ☐

6. Were you given a grace period before credit repayment?

Yes ☐ No ☐

7. If yes, how long was the grace period?

.....

8. What was the frequency of repayment?

Monthly ☐ One-off ☐ Quarterly ☐ Bi-annually ☐

C.3. Collateral requirement

9. Were you required to provide a collateral for the credit facility you borrowed?

Yes ☐ No ☐

10. If yes, what type of collateral were you required to provide?

Asset security ☐ Cash collateral ☐ Group security ☐ Guarantors ☐

C.4. Loan approval process

11. How long did it take from the time of application to disbursement?

Less than 1 week ☐ 1 week 2 weeks ☐ more than 2 weeks ☐ 1 month ☐ more than 1 month ☐

12. Were you satisfied with the loan approval period?

Yes ☐ No ☐

13. Did the loan approval process affect its repayment?

Yes ☐ No ☐

14. If yes, how did it affect your repayment?

.....
.....
.....
.....

C.5. Interest rate/structure

15. What was the interest rate charged on the credit that you borrowed?

.....

16. What was the repayment plan for the interest?

Together with Principal ☐ Before principal (during the grace period) ☐

C.6. Insurance requirement?

17. Were you required to pay insurance premium for your credit?

Yes ☐ No ☐

18. If yes, what type of insurance packages were you required to pay?

Keyman / Life insurance ☐ Agricultural insurance ☐

19. Did you pay the premium willingly?

Yes ☐ No ☐

20. If yes, why?

.....
.....
.....
.....

C.7. Banking history

21. Was your account turnover/credit history a requirement for your credit approval?

Yes ☐ No ☐

22. If yes, for how long were you supposed to have been banking /saving with the lender?

Less than 1 year ☐ 1 year ☐ more than 1 year ☐

This marks the end of our interview. Thank you again for your time and contribution.

Appendix II: GUREC Clearance

GULU



UNIVERSITY

P.O. Box 166, Gulu (U)
Website: www.gu.ac.ug
Email: gurec@gu.ac.ug

Tel: +256 471 432 096
Fax: +256 471 432 913
Mob: +256 772 305 621
+256 776 812 147

RESEARCH ETHICS COMMITTEE

31/05/2022

To: Jasper Ocen

0789051865

Type: Initial Review

Re: GUREC-2022-202: Gendered participation in intra-household decision making for Agricultural credit in Acholi sub-region, Version 2.0, 2022-04-26

I am pleased to inform you that at the 81st convened meeting on 17/02/2022, the Gulu University REC, committee meeting, etc voted to approve the above referenced application.

Approval of the research is for the period of 31/05/2022 to 31/05/2023.

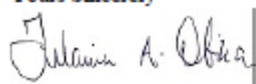
As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC eight weeks prior to the expiration date of 31/05/2023 in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Gulu University REC:

No.	Document Title	Language	Version Number	Version Date
1	Covid-19 risk management plan	English	Version 2.0	--
2	Informed Consent forms	English	Version 2.0	2022-05-18
3	Informed Consent forms	Acholi	Version 2.0	2022-04-26
4	Data collection tools	English	Version 2.0	2022-04-26
5	Protocol	English	Version 2.0	2022-04-26

Yours Sincerely



Julaina A. Obika (PhD)
For: Gulu University REC

Appendix III: Consent Form

Title of the study: Gendered participation in Intra-household decisions for Agricultural credit in Northern Acholi Sub-region.

Investigator(s): Ocen Jasper

Institution(s): Gulu University

Dear Respondent,

I am **Jasper Ocen** - a student pursuing a Master of Science in Agri-enterprises development of Gulu University. I am conducting research on the topic, “**Gendered participation in Intra-household decisions for Agricultural Credit in Acholi Sub-region.**” The purpose of this informed consent is to explain the study to you and answer any questions you may have. Should you decide to participate in the study, you will be asked to sign a consent, which you will be given a copy to keep.

The study seeks to explore and contribute knowledge to the improvement of Agricultural credit uptake in Northern Uganda through understanding the gendered relations determining intra-household decisions for Agricultural credit. The findings of this study will enable national policy makers to establish policies that enhance smallholder farmers to adopt credit to improve agricultural production.

Your participation will involve providing information through filling a questionnaire which will be administered by a research assistant.

You have been chosen to participate in the study because you have accessed credit from a financial institution before. The administration of the questionnaire is expected to take approximately 20-30 minutes. The number of participants in this study is 250 smallholder farmers

Risks/discomforts

There is no foreseeable risk of harm or discomfort that will arise from your participation in this study. The only risk or discomfort will be the inconvenience in terms of time spent during the interview.

Benefits

The following benefits of getting feedback on findings, providing advice and any new information that affects the study participants will be made available to research participants.

Confidentiality

Your identity will be concealed from everyone as we shall only use codes to identify participants. Information obtained will only be accessible by the research team. Soft copies of the data will be protected by password and hard copy files will be kept under lock and key. Confidential information will only be accessed by the principal investigator.

Alternatives

Please note that participation is purely voluntary and whatsoever reasons that may not allow you to participate in this study will not make you lose any benefit.

Costs

Also note that there will not be any additional cost incurred because of participating in this study. The only cost may be in terms of time consumed during the interview.

Questions

If you have any questions related to the study, or your rights as a research participant, you can contact the principal investigator, Jasper Ocen on telephone number +256 789051865 or via email on jasperpcen@gmail.com

Statement of voluntariness

Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty.

If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Gerald Obai Tel: No., 0772305621; email: lekobai@yahoo.com/lekobai@gmail.com or the Uganda National Council for Science and Technology, on plot 6 Kimera road, Ntinda, Kampala on Tel 0414705500.

Statement of consent

....., the interviewer has described to me what is going to be done, the risks, the benefits involved and my rights as a participant in this study. I understand that my decision to participate in this study will not affect me in any way. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name.....Signature of participant.....Date.....

Name.....Signature of interviewer.....Date.....

Appendix IV: Binary Logistic Regression (Stata Output)

Logistic regression	Number of obs	=	223
	LR chi2(14)	=	74.32
	Prob > chi2	=	0.0000
Log likelihood = -106.55967	Pseudo R2	=	0.2586

borrowing	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Sex	8.963417	3.290461	2.72	0.006	2.514231	15.4126
duration_leslyear	-.0718087	.5528253	-0.13	0.897	-1.155326	1.011709
Freqpayment_oneoff	.7328822	.39995	1.83	0.067	-.0510054	1.51677
ReqCollateral	2.095106	.9057738	2.31	0.021	.3198222	3.87039
CC_INSUR	.8524686	.5199884	1.64	0.101	-.16669	1.871627
CC_AHIS	-.9604137	.4722028	-2.03	0.042	-1.885914	-.0349131
loginterestamount	.0661096	.1899677	0.35	0.728	-.3062203	.4384394
logfarmlabour	1.087015	.5833276	1.86	0.062	-.0562863	2.230316
logfarmingexperience	.3818794	.2941524	1.30	0.194	-.1946488	.9584076
Creditsource_microfinance	.7717476	.5621661	1.37	0.170	-.3300777	1.873573
Creditsource_VSLA	.5882602	.4687329	1.26	0.209	-.3304394	1.50696
maritalstatus_married	-.8323586	.2766879	-3.01	0.003	-1.374657	-.2900603
c.Sex#c.Creditsource_microfinance	2.141604	.9671159	2.21	0.027	.2460916	4.037116
c.Sex#c.loginterestamount	-.7787739	.2775944	-2.81	0.005	-1.322849	-.2346989
_cons	-4.465552	2.51862	-1.77	0.076	-9.401957	.4708526

Appendix V: Multinomial Regression (Stata Output)

Log likelihood = -191.96238

LR chi2(42) = 132.51
 Prob > chi2 = 0.0000
 Pseudo R2 = 0.2566

Creditsource	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Bank						
Sex	-.7787956	6.813163	-0.11	0.909	-14.13235	12.57476
duration_less1year	-.1669962	1.408013	-0.12	0.906	-2.926652	2.592659
logcreditamount	.5619005	.5378977	1.04	0.296	-.4923597	1.616161
ReqCollateral	13.73953	751.9482	0.02	0.985	-1460.052	1487.531
borrowing	1.042118	.6562035	1.59	0.112	-.244017	2.328254
CC_AHIS	2.342615	1.157465	2.02	0.043	.0740255	4.611204
loginterestamount	-.4303648	.5646064	-0.76	0.446	-1.536973	.6762433
logfarmingexperience	.0077991	.7052887	0.01	0.991	-1.374541	1.39014
Part_femalespousecreditapp	.0897472	.2823592	0.32	0.751	-.4636667	.6431611
educHHH_tertiary	-.1636568	.6488569	-0.25	0.801	-1.435393	1.108079
educspouse_secondary	-.0848661	.6191866	-0.14	0.891	-1.29845	1.128717
logyearsrelations	-.4597779	.7608861	-0.60	0.546	-1.951087	1.031532
c.Sex#c.duration_less1year	-1.268648	1.844276	-0.69	0.492	-4.883362	2.346066
c.Sex#c.loginterestamount	.1567752	.5056619	0.31	0.757	-.834304	1.147854
_cons	-19.0408	751.9739	-0.03	0.980	-1492.883	1454.801
Microfinance_Institution						
Sex	-2.51444	4.990446	-0.50	0.614	-12.29553	7.266655
duration_less1year	-.0183965	1.021704	-0.02	0.986	-2.0209	1.984106
logcreditamount	.404198	.4146697	0.97	0.330	-.4085396	1.216936
ReqCollateral	1.442326	1.449297	1.00	0.320	-1.398244	4.282896
borrowing	.8459051	.4948454	1.71	0.087	-.123974	1.815784
CC_AHIS	.9928144	.5798098	1.71	0.087	-.143592	2.129221
loginterestamount	-.2324604	.4176334	-0.56	0.578	-1.051007	.5860861
logfarmingexperience	.3051447	.532849	0.57	0.567	-.7392202	1.34951
Part_femalespousecreditapp	-.3061469	.2047765	-1.50	0.135	-.7075016	.0952077
educHHH_tertiary	.1075974	.5074722	0.21	0.832	-.8870297	1.102225
educspouse_secondary	-.1125936	.4800711	-0.23	0.815	-1.053516	.8283284
logyearsrelations	.3282675	.553843	0.59	0.553	-.7572449	1.41378
c.Sex#c.duration_less1year	.1572177	1.397688	0.11	0.910	-2.5822	2.896635
c.Sex#c.loginterestamount	.2006136	.3748809	0.54	0.593	-.5341394	.9353666
_cons	-5.392218	4.854047	-1.11	0.267	-14.90598	4.12154
VSLA						
Sex	-11.48579	6.35017	-1.81	0.070	-23.9319	.960312
duration_less1year	-3.19648	1.164182	-2.75	0.006	-5.478234	-.9147255
logcreditamount	-.0561851	.4716922	-0.12	0.905	-.9806849	.8683146
ReqCollateral	4.074273	1.641985	2.48	0.013	.8560413	7.292504
borrowing	.7214301	.5325636	1.35	0.176	-.3223753	1.765236
CC_AHIS	.2230143	.5668936	0.39	0.694	-.8880767	1.334105
loginterestamount	-1.714434	.5720689	-3.00	0.003	-2.835669	-.5931997
logfarmingexperience	-1.156896	.5615012	-2.06	0.039	-2.257418	-.0563741
Part_femalespousecreditapp	-.1142529	.2187251	-0.52	0.601	-.5429461	.3144404
educHHH_tertiary	-1.014362	.5735121	-1.77	0.077	-2.138425	.1097012
educspouse_secondary	-.6045784	.5224846	-1.16	0.247	-1.628629	.4194726
logyearsrelations	.8387837	.62369	1.34	0.179	-.3836262	2.061194
c.Sex#c.duration_less1year	1.627919	1.502399	1.08	0.279	-1.316729	4.572568
c.Sex#c.loginterestamount	.8717507	.4887733	1.78	0.074	-.0862273	1.829729
_cons	21.87561	5.985548	3.65	0.000	10.14415	33.60707
Friends_relatives	(base outcome)					

Appendix VI: Probit Regression (Stata Output)

```

Probit regression               Number of obs   =       203
                               LR chi2(14)      =       22.95
                               Prob > chi2       =       0.0610
Log likelihood = -86.394186     Pseudo R2      =       0.1173

```

creditsource_FriendsFamily	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Sex	1.369076	2.23234	0.61	0.540	-3.00623	5.744383
duration_less1year	.3973551	.4633462	0.86	0.391	-.5107867	1.305497
logcreditamount	-.1487037	.2048527	-0.73	0.468	-.5502078	.2528003
ReqCollateral	-1.530527	.7001093	-2.19	0.029	-2.902716	-.1583375
borrowing	-.441447	.2368409	-1.86	0.062	-.9056466	.0227526
CC_AHIS	-.4708794	.2717654	-1.73	0.083	-1.00353	.0617711
loginterestamount	.4330337	.2073619	2.09	0.037	.0266118	.8394555
logfarmingexperience	.2203009	.2602916	0.85	0.397	-.2898614	.7304631
Part_femalespousecreditapp	.0979112	.1015048	0.96	0.335	-.1010345	.296857
educHHH_tertiary	.2153101	.2542683	0.85	0.397	-.2830466	.7136669
educspouse_secondary	.1495167	.236333	0.63	0.527	-.3136875	.6127209
logyearsrelations	-.161718	.2811296	-0.58	0.565	-.7127219	.3892858
c.Sex#c.duration_less1year	.0189002	.6514042	0.03	0.977	-1.257829	1.295629
c.Sex#c.loginterestamount	-.1169238	.1690441	-0.69	0.489	-.4482441	.2143965
_cons	-2.965912	2.109797	-1.41	0.160	-7.101038	1.169213

Appendix VII: Krejcie and Morgan Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970