A STUDY OF THE FACTORS THAT AFFECT AGRIBUSINESS FINANCING IN ZAMBIA: A CASE STUDY OF SMALLHOLDER FARMERS IN CHIBOMBO DISTRICT

BY

RICHARD CHANDA

A Dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the award of the Degree of (Master of Business Administration in Finance)

THE UNIVERSITY OF ZAMBIA

LUSAKA

2024

DECLARATION

I, **Chanda Richard,** do hereby declare that this work is my original work achieved through personal reading and research. This work has never been submitted to the University of Zambia or any other Universities. All sources of data used and literature on related works previously done by others, used in the production of this Dissertation have been duly acknowledged. If any omission has been made, it is not by choice but by error.

Signe:…… Date:……

COPYRIGHT

APPROVAL

This Dissertation by **Chanda Richard** is approved as a partial fulfilment of the requirements for the award of the Degree of (**Master of Business Administration in Finance**).

Examiner 1	Signature	Date
……	…….	……..
Examiner 2	Signature	Date
……	…….	……..
Examiner 3	Signature	Date
……	…….	……..
Chairperson Board of Examiners	Signature	Date
……	…….	……..
Supervisor	Signature	Date
……	…….	……..

ABSTRACT

Limited access to agricultural financing is a constraint to the development of the Smallholder Farmers (SHFs) of the agriculture sector. The formal financial institutions face a challenge to provide agricultural credit that meets the unique demands of SHFs in the agricultural. Although SHFs face several challenges, lack of capital for investment contribute significantly to reduced production, increased food insecurity, and persistent poverty, especially in rural areas of the country. The research aimed to address three fundamental inquiries: the extent of financial inclusivity, the factors influencing access to finance, and the exploration of alternative financing models. Through a comprehensive study involving data collection, analysis, and interpretation, this research sheds light on the financial landscape for these farmers. A descriptive research design was employed which led to the adoption of a mixed-methods approach. The target population for investigation was drawn from 48,000 SHFs in Chibombo district. The sample size was 100 to whom semi structured questionnaires was administered for data collection based on a two-stage sampling procedure (purposive and saturation). The reliability of instrument was accessed using a half- split technique. The data was analyzed using both qualitative and quantitative methods. A multiple logistic regression was conducted to determine the relationship between dependent and independent variable variables. The findings reveal a stark reality of exclusion, with only 19% of SHFs surveyed reported having accessed credit and only 8% of rural SHFs were utilizing formal banking services. These statistics reveals a considerable hurdle in their efforts to secure financial resources for enhancing agricultural activities and livelihoods. The study delved into credit access challenges, both on the demand and supply sides, and identified variables such as gender, age, and income that impacted credit availability. Logistic regression analysis further explored the influence of these variables on credit access. In response to these challenges, the research proposed innovative financing models tailored to the unique needs of SHFs. These models include mobile money lending, peer-to-peer lending, guarantee schemes, collateral substitutes, and group lending. Each model offers an avenue to empower farmers economically and overcome barriers to financial access. The study recommended that the Government initiatives should focus on improving rural infrastructure, including road networks and transportation systems**.** Further, incentivize institutions or partnerships that actively participate in community-based financing initiatives by offering tax breaks or grants to them. Lastly, regulatory bodies should collaborate with financial institutions to develop a regulatory framework that supports

and governs mobile money lending to ensure consumer protection and fair competition. In conclusion, this research contributes to the discourse on agriculture financing by providing insights into the financial realities of rural SHFs in Zambia. The proposed models present actionable pathways to uplift these farmers, foster sustainable development, and promote financial literacy. As Zambia seeks to enhance its economic landscape and empower its agricultural sector, the findings of this study offer valuable guidance for shaping policies and interventions that can drive lasting positive change.

Keywords: Agriculture Financing, Smallholder Framers, Agribusiness, Gross Domestic Product (GDP), Microfinance

ACKNOWLEDGEMENTS

Firstly, I am appreciative to the Almighty God, the source of all blessings. For the insight, tenacity, and direction you gave me during this study.

Words cannot express my gratitude to my supervisor, Dr Euston Kapotwe for his invaluable patience and feedback. I also want to appreciate my defense committee, who generously provided knowledge and expertise.

I'd like to express my gratitude to all of my friends and colleagues for serving as sounding boards for the various ideas I had started out with.

Finally, it would be very remiss of me not to acknowledge my family, particularly my wife, parents and siblings. Their confidence in me has sustained my enthusiasm and upbeat attitude throughout this process. God bless you all!

DEDICATION

I dedicate this work to my wife, Monica Mkonda Chanda, who has supported me throughout and ensured that I put in the necessary effort to complete the task at hand. To my parents and siblings, I am grateful. You can never measure how much I adore you all. May God reward you handsomely!!

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS & ABBREVIATIONS

AfCFTA	Africa Continental Free Trade Area
AMZ	Agora Microfinance Zambia
APF	Agri-ProFocus Zambia
CSO	Central Statistics Office
FRA	Food Reserve Agency
GDP	Gross Domestic Product
IAPRI	Indaba Agricultural Policy Research Institute
IFAD	International Fund for Agricultural Development
LR	Logistic Regression
MBT	Micro Bankers Trust
MFI	Micro Finance Institution
MFI	Microfinance Institution
MSME	Micro, Small, & Medium Enterprise
PFSL	Pulse Financial Service Limited
SHF	Smallholder Farmer
VFZ	Vision Fund Zambia
ZMW	Zambian Kwacha (currency)
ZNFU	Zambia National Farmers' Union

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In 2023, approximately Seven Hundred Million people around the world were subsisting on less than $2.15 (UN, 2023). Fundamentally, poverty is a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit (UN, 1998). One of the Sustainable Development Goals (SDGs) of the United Nations (UN) is to eradicate extreme poverty in light of the dire and enduring effects of poverty. The UN is particularly concerned about Sub-Saharan Africa, where 42 percent of the population lives below the poverty line.

A vital component of the fight against extreme poverty is agriculture. Agriculture can help reduce poverty for 75% of the world's poor, who live in rural areas and work mainly in farming (Word Bank, 2023). A large number of developing nations rely heavily on agriculture, especially the majority of low-income rural and semi-rural communities worldwide. Over 2.5 billion people make their living from agriculture, and the communities of smallholder farmers (SHFs) in this industry are essential to guaranteeing food security and assisting in the reduction of poverty in the areas in which they reside. An estimated 500 million smallholdings are managed by SHFs in the agricultural sector; in most developing nations, especially in Southern Asia and Sub-Saharan Africa (SSA), SHFs supply a large percentage (more than 80%) of the food consumed (Kamara, 2019).

It is feasible to increase agricultural productivity. A wider range of farmers should be able to access credit facilities, and deliberate action is required to increase access to agricultural inputs such as fertilizers, high-quality seed, and pesticides. Additionally, there should be a readily available off-taker market for the produce, which includes suppliers of inputs, aggregators, traders of soft commodities, warehouse receipt systems, and commodity exchanges for agriculture products, particularly grains (Soko Directory, 2016). In a recent analysis, it was determined that Africa could produce two to three times more grains and cereals, which would add 20% more grains and cereals to the 2.6 billion output tons globally today (McKinsey, 2019).

In Zambia, agriculture remains the primary source of income for most rural residents and will

continue to be the backbone of the national economy for many years to come. Only 15% of the nation's 47% total land area is under cultivation, indicating that there is room for the country to improve its agricultural production even with ideal weather, fertile soil, and an abundance of water supplies. The cost of financing is a major barrier to the sector's development, which is acknowledged by the Government of Zambia (GRZ). To address this, the GRZ is implementing policies to enhance the availability of credit to MSMEs (BOZ, 217).

Similar to this, the International Finance Corporation (2015) points out that having access to financial services is essential for improving post-harvest practices, facilitating household cash flow, facilitating better access to markets, and encouraging better risk management. However, it is not a means to an end in and of itself. Long-term food security can be enhanced by increasing agriculture's resilience to climate change and aiding in climate adaptation through the use of financing. The majority of farmers in developing nations are smallholders, and they face substantial obstacles in gaining access to a wide range of financial services. The main goal of this research is to disentangle the variables preventing small-holder farmers from receiving this crucial funding.

1.2 Synopsis of Agriculture Finance

According to Meyer (2011), agriculture finance refers to the provision of several forms of financial support for inputs, production, distribution, post-harvest needs, processing, and marketing for agricultural enterprises and activities. In addition to supporting the entire value chain from the supply of inputs like fertilizers through processing, offtake, and marketing of the produce, Meyer goes on to define agricultural financing as the provision of financial services for farms and farming-related industries (Meyer, 2011).

The Zambia National Farmers Union (ZNFU) released a report in 2010 that claimed that the country's agricultural finance market was not functioning effectively. The majority of farmers claim that in addition to it being expensive and the lenders being prejudiced in favor of larger corporate clients, they also struggle to obtain agricultural financing. Both the length of most credit facilities and the turnaround time for processing loan applications are too short for practical servicing. Therefore, if the loan payback terms are not appropriately aligned with the borrower's anticipated revenue from sales revenues, this industry becomes even riskier. The imbalance between income and expenses raises the sector's risk profile even more. The ZNFU also points out that banks are hesitant to lend without demanding extremely strong collateral coverage and a high-risk premium because, in their

view, lending to the agriculture sector is costly and dangerous. When banks have extended loans to customers in the agricultural industry, they have often had to declare significant losses. In contrast to the 13.5% percentage of non-performing loans in all other economic sectors, the amount of loans extended to agriculture is notably high, exceeding 37 percent. Consequently, banks have refrained from providing loans to this industry. (ZNFU, 2010).

Smallholder farmers, off-takers, and agricultural product processors in Zambia, as well as many private sector enterprises interested in funding agriculture, still have a window of opportunity to grow their investment portfolios thanks to agriculture financing; however, obtaining this financing presents a number of obstacles (CABRI, 2014). The seasonality of production and the irregular sales revenues, the high cost of operating a business, and systemic risks like floods, El Nino weather patterns, crop diseases, and a shortage of adequate agricultural risk mitigants are a few of these difficulties. This all contribute to the difficulty of obtaining and obtaining funding (IFC, 2014).
Because Small Holder Farmers (SHFs) are the primary providers of food security in Zambia, this paper aims to examine the factors that affect agribusiness financing in Zambia.

1.3 Problem Statement

Smallholder farmers constitute a vital component of Zambia's economy, serving as key contributors to both the nation's Gross Domestic Product (GDP) and the livelihoods of a substantial portion of rural Zambian population, estimated at 92% (1LO, 2015). The agricultural sector, predominantly comprising smallholder farmers, plays an indispensable role in ensuring food security and fostering economic growth within the nation (Chirwa & Odhiambo, 2016). However, despite their pivotal role, smallholder farmers in Zambia are grappling with a formidable challenge - substantial exclusion from accessing essential financial services (ILO, 2015). Poor access to financing was cited as a primary barrier to investment and growth in Zambia in a 2007 World Bank survey on enterprise development in Zambia. In a case study on loan availability in Zambia, CABRI (2014) discovered that just 13% of small-scale farmers had access to credit. Small-scale farmers that have limited access to credit are likely to experience low production, high levels of food insecurity, and lifelong poverty.

The aforementioned research mostly focused on determining the barriers to participation from the bank's point of view rather than the farmers and without providing alternative sources of finance. In

addition, some researches that were done relied more on a qualitative methodology, which might not have produced reliable findings. Therefore, it is imperative that a study be conducted to determine the variables that, from both viewpoints of smallholder farmers and financial service providers affects their access to financing and provide alternative sources of finance. Further, a solid strategy be adopted by employing a mixed method research approach.

1.4 General Research Objective

The general objective of the research is to a study the factors that affect agribusiness financing in Zambia.

1.1.1.1. 1.4.1 Research Objectives

i. To determine the proportion of smallholder farmers accessing finance in Zambia.
ii. To establish factors affecting smallholder farmers access to finance.
iii. To find alternative financing options for smallholder farmers.

1.1.1.2. 1.4.2 Research Questions

i. What is the proportion of smallholder farmers that have access to finance in Zambia?
ii. What are the factors affecting smallholder farmers' access to finance?
iii. What are the alternative financing options for smallholder farmers?

1.5 Justification of the Research

A critical role for small-scale farmers is played in the battle against poverty. Programs designed to promote small-scale farmers' access to financing will be implemented more effectively if factors influencing that access are well understood. Furthermore, policymakers can develop agriculture finance strategies that will enable farmers to access affordable financing and have the financial clout to obtain inputs on time, which is essential for increased production, by having a better understanding of the factors affecting farmers' access to finance.

In addition to increasing SHF productivity, this will benefit farm households, communities, and Zambia as a whole by increasing food and financial security. Moreover, higher productivity will help the nation's GDP develop and successfully combat poverty, which is in line with the SDG1 target. Additionally, the research will broaden our understanding of agricultural finance in Zambia and throughout Africa.

1.6 Scope of Study

Three main goals will be examined in this study: the proportion of SHFs accessing finance, the factors affecting SHFs' access to financing and the alternative financing options for SHFs in Zambia. The study will be carried out in Chibombo district of Central province.

1.7 Theoretical and Conceptual Framework

1.7.1 Conceptual Framework

This study's independent variable (collateral, character, capacity, capital, condition, loan size, agribusiness ability, sales contract, membership) is assumed to have an impact on access to financing that boosts agribusiness productivity by increasing output volumes (from increased production in various value chains). These are the explanations for the study's variables and dimensions. The above-mentioned variable agricultural financing requirements, if favorable, will permit simple access to agricultural financial products, which will increase productivity and boost returns from sales of both raw and/or processed agricultural products, potentially improving the incomes of agribusiness owners and managers.

This conceptual framework dwells on the fact that agricultural financing requirements by agribusinesses are intrinsically linked to the general increment in the productivity of agribusinesses. The relationship between agricultural financing requirements and Smallholder famers' knowledge of financing in Zambia.

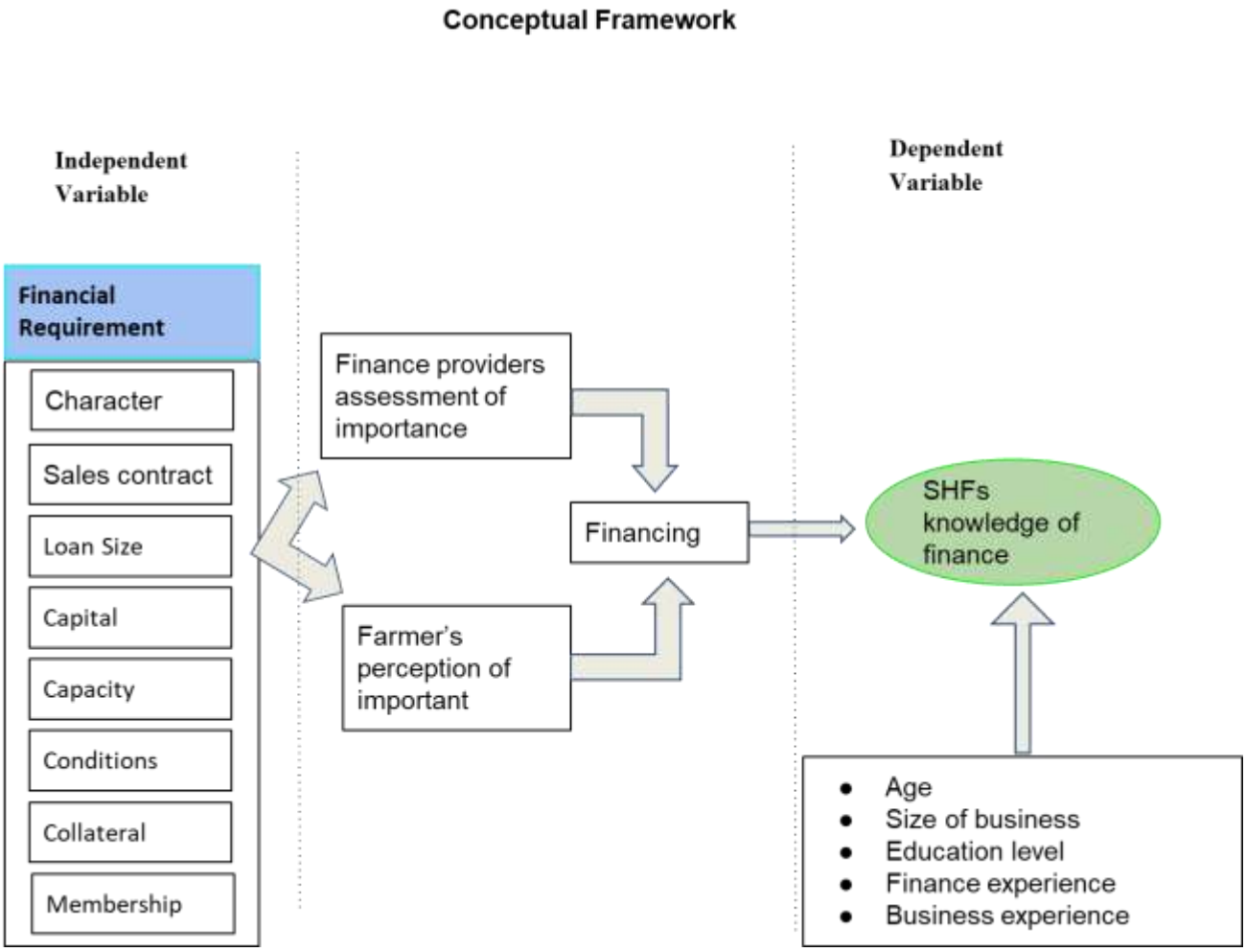

Figure 2.1 Conceptual Framework.

1.7.2 Theoretical Framework

The theoretical frameworks and models offered to serve as the foundation and guidelines for this study's examination. On the factors that influence how a lender and borrower interact, several hypotheses have been put forth. These stylized ideas have served as a foundation for the identification of qualified borrowers, alignment with lender requirements, and understanding what factors influence the decisions made by borrowers, such as SHFs, regarding the most effective use of available financial resources. This study will concentrate on a few ideas, such as Credit Rationing Theory, and Joint Liability Theory, from among the different theoretical frameworks in the world of finance.

1.7.2.1 Credit Rationing Theory

According to Stiglitz and Weiss (1981), the theory describes the behavior of lenders and borrowers in a market which is characterized in a credit market with excess demand and restricted supply of credit facilities, like what is experienced by most agribusinesses. There are three main items which banks mainly consider with respect to extension of credit to potential borrowers; interest rates, the amount of the loan, collateral required or the "stake" which a bank demands from a potential borrower to invest some "skin in the game". Depending on what rate is set for loans, it can have an adverse selection effect on potential borrowers. Interest rates can be used as a screening mechanism which differs depending on the risk level of a potential borrower. It is common practice amongst banks to request collateral to secure most loans. However, increasing the amount of security required for a loan can have the effect of discouraging less riskier borrowers or can entice borrowers to invest in riskier projects which could result in a bank's profits decreasing. To mitigate the moral hazard risk which may arise a borrower behaving irresponsibly with servicing of a loan, it is not uncommon for a bank to request a potential borrower to have an equity investment in a project for which a loan is required. This would enforce prudent management of the project and loan servicing. Therefore, though there may not necessarily be a shortage of funds to lend to potential borrowers, the due diligence conducted by banks when considering potential borrowers may cause the lenders to ration credit despite the existence of excess demand for loans.

1.7.2.2 Joint Liability Theory

This theory was put forward by Ghatak and Guinnane (1999). Joint liability denotes the obligation of two or more partners to pay back a debt or be responsible for satisfying a liability. A joint liability allows parties to share the risks associated with taking on debt and to protect themselves in the event of lawsuits, however, the theory states the challenges of extending credit to the poor and denotes the four main problems faced by lenders as follows:

Adverse Selection: Adverse Selection, which results from incomplete or no information that the lenders may have about the borrowers, is the first issue discovered by joint liability lending. The lender might not be aware of a borrower's traits, or they might not even be evident. Lenders typically perform due research on borrowers. However, because the lending industry involves several risk variables, lenders may ask for collateral in an effort to reduce those risks. The problem with this

mitigating strategy is that many low-income borrowers would not have adequate collateral to receive a loan from a bank. However, because the impoverished in a community are familiar with one another's traits, they can vouch for each other as they know who can take on a higher risk. Therefore, the safe borrowers can subscribe for higher the risk, additionally joint liability contracts can restore full efficiency.

***Moral Hazard*:** The second problem is called Moral Hazard which builds its premise on the work of Ross (1973) and Jensen and Meckling (1976). The Moral Hazard problem is based on the principal-agency dilemma which describes the challenges from conditions of asymmetric information when a principal hires an agent. When the agent's interests' conflict with those of the principal, a dilemma arises. It is possible to implement mechanisms that will help the principal and agent's motivations coincide. The principal-agent problem theory is applied to moral hazard problems. The lender might not be aware of the borrower's intentions. For instance, the borrower's goal might be to obtain credit, but they might end up using it for something else that they wouldn't have told the lender about. As a result, joint responsibility lending offers a framework for peer or collective monitoring to guarantee that the funds are used for the intended purpose and promotes prudent management of credit facilities (Stiglitz, 1990 and Besley and Coate, 1995).

***Costly State Verification*:** The Cost of State Verification is the third issue raised by the theory. Verifying the information provided by unreliable borrowers can be highly expensive. Physical access to the borrowers' locations can be difficult as well because most borrowers would be based in remote areas with difficult access. Once more, joint liability can serve as a mitigating element to lower anticipated audit costs and boost effectiveness.

***Enforcement*:** The enforcement issue is the final and fourth issue. According to the notion, it is simpler to enforce loan terms against a group of borrowers with joint culpability than it is against a single borrower with limited liability. However, this alternative can turn out to be a difficult and expensive task. With joint liability borrowing, a bank and the community can penalize borrowers as a preventative measure against credit obligations default.

1.8 Factors Influencing Access to Finance for Agricultural Growth

Only 27.5% of Zambian businesses had access to credit, which was identified as the biggest obstacle to their expansion in the World Bank's 2013 Enterprise Survey. In addition, 22.5% of the informal sector's access to finance was constrained by poor record-keeping abilities and a lack of corporate

governance knowledge. Further research revealed that 9% of medium-sized organizations (20-99 employees), 53% of small firms (enterprises with 5-19 employees), and 0 of the bigger firms (100+ employees) had their loan applications rejected. The excessive cost of borrowing, even in cases where credit facilities are provided, further limits the ability of smallholders to repay their loans. It was reported that interest rates offered by commercial banks were as high as 40%, whilst those offered by the micro-finance institutions were an astonishing 70%. In Zambia, access to finance for smallholders is restrictive due to the informal structures of the enterprises, the significant collateral required by lenders and unsuitable lending products offered by banks to SMEs. (World Bank, 2013).

1.8.1 Cost of Credit

Even though agriculture supports most African economies and provides employment for 55% of the continent's population, banks only devote about 1% of their financing to this industry. Additionally, only 5.9 percent of individuals in rural areas of developing nations have access to formal credit, and only 4.7% have bank accounts. Interest rates are one of the macroeconomic variables that have a big impact on the agricultural sector since they determine how expensive borrowing money is. Because it requires a lot of cash, the agriculture sector is strongly impacted by changes in interest rates. Agriculture is a high-risk industry by nature. Prices and production output can be influenced by a wide range of circumstances. Farmers in underdeveloped nations also don't have access to mechanisms for reducing risk, such agriculture insurance, futures contracts, or guarantee funds. There are several reasons why formal lenders don't offer loans to the agricultural industry, including high service delivery costs, information asymmetries, a lack of branch networks, and assumptions that farming is not very profitable. However, the primary cause is the industry's high level of uncontrolled output and price risk. Because most SME farmers do not have secured-title land, which is the preferred type of collateral, formal lenders frequently overemphasize the use of immovable collateral as the main buffer against default risk, excluding farmers who do not have enough collateral. If they do have secured-title land, however, the value may not be sufficient to cover a loan. Even though a large portion of the population in Sub-Saharan Africa and South Asia lives in rural areas and relies on agriculture and livestock raising as their primary sources of income, there is a limited supply of or access to institutional agricultural financing as a result (Wenner, Mark D., 2010)

Zambia has excessive interest rates, like most developing nations, which severely restrict the ability

of potential borrowers to receive agricultural financing, especially from the formal financial sector like commercial banks. The major goals of financing for agricultural uses are working capital support for cultivation and operations costs, as well as capital investments in machinery and vehicles (Sebatta et al, 2014). However, Diagne and Zeller (2001) discovered in their study that households' decisions on which microfinance institution to join were unaffected by the amount of interest rates levied on loans. Non-price characteristics of credit institutions and their offerings, such as the kinds of loans made available and the conditions under which they may be used, as well as the kinds of non-financial services made available, such as training in the management of micro-enterprises are more important when it comes to farmers accessing finance.

A vicious cycle is also produced by the high cost of credit and the dearth of long-term loans. Due to their larger debt loads in relation to their incomes, smallholder farmers are more likely to default on their loans when interest rates are high. High non-repayment rates thus motivate banks to increase the risk premium and increase rates. The likelihood that a farmer won't generate enough income to repay a loan for the acquisition of capital equipment on time increases when repayment is spread out over one or two years as opposed to five. Delinquencies increase, which supports banks' propensity to only provide short-term loans (ZNFU, 2010).

1.8.2 Collateral

Due to their inability to offer adequate collateral, if any, most agribusinesses have difficulty obtaining credit facilities from traditional credit lenders. When collateral is there, it is frequently either insufficient or difficult to dispose of, making it unsuitable for a lender to take (Jessop et al, 2012). To protect themselves from the various types of risks associated with agriculture lending, credit providers in this industry ration credit excessively and rely more on traditional collateral, such as real estate in urban areas, which is preferred by lenders rather than borrowers' assets in rural areas. Rural assets are also less acceptable to lenders since they are more difficult to register as collateral due to cultural, legal, and administrative barriers. Therefore, it would be challenging to foreclose on a property in a rural location in the event of default. Therefore, the ratio of collateral to financing amount is typically substantially higher for a lender to extend credit to a borrower in a rural location (IFC, 2011). Hansungule (2007) did a study on the factors influencing farmers' access to credit in the Eastern region of Zambia. He discovered that collateral was a significant factor that had an impact

on farmers' ability to receive loans. Additionally, it is essential that borrowers offer appropriate security that is acceptable to the bank. Guarantors, assets, and other kinds of proof of income, such as pay stubs, can also be used as collateral (Njuguna & Nyairo, 2015). One of the main goals of the document, according to research on traditional land holding certificates, which were established in Petauke district in Zambia's Eastern Province, was to expedite the settlement of land disputes that may otherwise take a chief some time to decide (Green & Norberg, 2018). Land certificates were also produced in Chibombo district in Zambia's Central Province with the same aim of resolving disputes. In terms of helping smallholder farmers identify their land, reduce land conflicts, and take part in longer-term agricultural development, the issuance of these certificates represents a positive move for the agriculture industry. Beyond raising land productivity and returns, it also speaks to gender equality for female land users. These ParcelCerts certificates were processed by Madeem Zambia with logistical and technical assistance from MUSIKA. The potential of credit providers and input suppliers, such as banks and agro-dealers, adopting the ParcelCerts as proof of ownership, which can be used as collateral to source loans and inputs, accordingly, is one of the next steps being examined under the Madeem process.

1.8.3 Literacy Levels

The low levels of financial literacy and education among farmers are another factor contributing to formal lenders' unwillingness to provide loans to borrowers in the agricultural industry (Wenner, Mark D., 2010). SHF typically engages in subsistence farming, as they have for many years. SHF must possess a specific level of agricultural knowledge and management abilities to be competitive and participate in agriculture value chains. SHFs frequently lack business sense, financial literacy, accounting abilities, and medium-term strategy formulation in addition to their lack of agricultural technical expertise. Institutions struggle with the lack of competence among the SHFs' business partners because most smallholders have little to no formal education, with many having not finished their primary or secondary education. Smallholder family heads in Zambia had an average of 6 years of formal education; more than 50% had completed various levels of primary education, while just 24% had completed secondary education. All the other provinces' numbers are comparable, except for Eastern province, where there are 14% more household heads without a high school diploma than in the other provinces. (RALS, 2012).

1.8.4 Household Size

The number of adults residing in each home is referred to as the household size. In agriculture, household size can be a good indicator of the amount of labor available to carry out different tasks on the farm. In Zambia, there are typically six people living in each household. As a result, a family with few adult members may be forced to use credit to finance investments in labor needs for increased productivity. As a result, households with fewer members than those with more members are anticipated to have a favorable impact on access to finance.

1.8.5 Household Income

The amount of money an agribusiness owner makes also reflects the current state of the company. The ability of the borrower to repay the loan within the specified and agreed-upon time is therefore assessed by financial lenders. So, it is quite improbable that an agribusiness owner with a very low income will be able to obtain financing from banks or other lenders. This is corroborated by Korir's (2013) study on the determinants influencing financial access, which found that income was crucial for obtaining loans. According to additional research, both high farm income and off-farm income facilitate access to agricultural finance, which in turn facilitates formal loan access (Denkyirak et al, 2016).

1.8.6 Age of the Household Head

The above de facto concept of population is the foundation for the definition of population. A young population is defined as those under the age of 14, whilst an old population is defined as those 65 and over (WDI-World Bank, 2016). Regarding access to credit, the household head's age is also quite important. Banks and microfinance organizations utilize it while deciding whether to provide small-scale finance with funding. Age can either have a good or bad impact on the farmers' ability to acquire capital. The average age of SH household heads in Zambia is 48.

1.8.7 Gender of the Household Head

Research by Ali Chandio et al (2016), in Pakistan, discovered that families with male heads were more likely to get agricultural financing than households with female heads. This could be explained

by several variables, including the fact that men typically have easier access to bank financing criteria such as land (collateral), which is crucial for obtaining credit, especially in developing economies. Sebatta et al. (2014), on the other hand, claim that there was a significant distinction between female farmers who had access to financing and those who did not. Female SHFs still have limited access to financing, however, because of cultural conventions that mandate that women only apply for loans with their husbands' approval. Ironically, women have the capacity to establish career possibilities that would have a more significant and long-lasting influence on children's health, nutrition, and education if they did not ask their spouses for permission first.

1.8.8 Proximity to Urban Center

Most financial institutions are found in urban hubs in most communities in Zambia and other developing nations. As a result, farmers who are located close to these centers have a better chance of obtaining financing than those who are far away. This is primarily because, as was said in the previous section, processing loan applications for consumers in remote locations is expensive for financial lending organizations. Lemessa and Gemechu's (2016) research in Ethiopia, which found that the physical distance between a farmer and a lending institution had an impact on access to financing, supports this.

1.9 Operational Definitions

Agribusiness: The term ‘agribusinesses was coined by two Harvard Economists, Johan Davis, and Ray Goldberg in 1957. They defined agribusiness as "the sum total of all operations involved in the manufacture and distribution of farm supplies; production operations on the farm; and the storage, processing, and distribution of farm commodities and items made from them.”

Agro Dealer is an entrepreneur who sells, and supply agriculture inputs such as seeds, fertilizer, stock remedies, agrochemicals, animal feed, and other services needed closer to farmers (FRA, 2022).

Stallholder Farmer (SHF): Small-scale/smallholder agriculture is defined in different ways that also vary from country to country. The most widely used definition of smallholder refers to those farms of less than 2.0 hectares (HLPE & IFAD, 2013). However, in common parlance, the term is often used to refer to any farmer who is not large-scale and/or not very financially well off.

Microfinance is a type of financial services offered to individuals of lower socioeconomic backgrounds or those who lack access to traditional financial services (CFI, 2015).

Gross Domestic Product (GDP) is defined by the Bureau of Economic Analysis (BEA) as the value of the goods and services produced by the nation's economy less the value of the goods and services used up in production.

1.10 Organization of the Study

The study is divided into five primary sections. The introduction to the research topic is found in Chapter 1. The second chapter contains the overview of Zambia's agriculture industry and clarifies government support structures and regulations. It also provides an empirical and theoretical evaluation of the literature on the research issue. Related research on the factors influencing access to financing for the growth of agriculture in different nations are examined in order to have a deeper understanding of the subject matter. The research methodology, which covers the study area, the analytical framework, the regression model, and data analysis to assure research validity and reliability, is covered in Chapter 3. The findings of the statistical analysis are presented in Chapter 4, together with an exploration of the variables influencing agricultural finance in Zambia. The demographic traits and variables influencing smallholder farmers' access to financing in Zambia are also covered in this chapter. The study is finally summarized, conclusions are drawn, and suggestions for additional research are made in chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This paper's primary goal is to examine the variables that impact agribusiness financing and provide guidance for policies that guarantee these variables are taken into account and controlled. The theoretical and conceptual literature is expanded upon in this chapter. The cost of credit, collateral, accessibility of financial institutions, and the makeup of Zambia's financial sector are among the important concepts that influence one's ability to obtain financing. Additionally, the chapter describes how the factors affect how many facilities smallholder farmers in Zambia can access then concludes the chapter.

2.2.Overview of Agriculture Financing

Meyer (2011) defines agriculture finance as the extension of several forms of funding for enterprises and activities related to agriculture, including inputs, production, distribution, postharvest needs, processing, and marketing. According to Meyer (2011), agricultural financing also includes support for the entire value chain, from the supply of inputs like fertilizers to the processing, off-taker, and marketing of the produce. It also includes financial services for farms and farming-related industries. Agriculture credit, also known as agriculture finance, can come from both institutional and non-institutional sources, such as development organizations, banks, and MFIs, as well as cooperative organizations. Olomola (1999) states that funds obtained from non-institutional sources for agricultural credit cannot be used for developmental purposes. The International Finance Corporation (IFC) views agriculture finance and insurance as crucial tools for reducing extreme poverty. Approximately 500 million smallholder farming households worldwide, or 2.5 billion people, primarily depend on agriculture for their livelihoods. The IFC offers agriculture finance and insurance that helps smallholder farmers expand and become more successful by facilitating their access to upgraded technologies, commercialization, and deployment of appropriate climate-friendly practices, risk management, and financial management tools (IFC, 2015).

In rural areas, SHFs are mostly given agricultural credit in the form of cash or in-kind supplies of inputs through programs like out-grower schemes in return for harvested crops that are then sold to

the lender, who is typically also the crops off taker. In the out-grower system, the lender would provide the SHFs a markup on the crop's cost. Strategically, financing for agriculture is essential to reducing extreme poverty and boosting prosperity. Finance for agriculture will enable less fortunate farmers to enhance their income and food production by 2050, in order to meet the needs of at least nine billion people through production (World Bank, 2018). In recent years, Zambia's agriculture sector has benefited greatly from credit extensions in contrast to other industries, it has experienced a decrease in the last ten years concerning the overall amount of bank loans. Ten years later, bank lending to the agriculture sector fell dramatically to a concerning 17.1% from an estimated 25% of total bank loans in 2006 (NFIS, 2017).

Consequently, in order to improve agricultural financing for smallholder farmers, there will need to be a more organized farming community within commercially oriented groups like cooperatives. This will facilitate their ability to obtain loans directly from financial institutions (IAPRI, 2018). In the same vein, the structured frameworks would lessen the difficulties associated with expensive state verification. Due to the very high risks involved with the agriculture industry, efforts to increase finance will remain difficult in its current form, especially from commercial banks. One method to deal with the issues raised by the Joint Liability theory of moral hazard, adverse selection, expensive state verification, and enforcement is through well-established cooperatives.

2.3.The Financial Sector

A financial sector makes it easier to use money for savings, investments, and payments via a variety of channels. Together with the aforementioned, it comprises financial infrastructure, which is supported by legal and regulatory frameworks that facilitate financial transactions, payments systems, audits, accounting procedures, and financial disclosure. "The set of institutions, instruments, markets, as well as the legal and regulatory framework that permit transactions to be made by extending credit" is how the World Bank define the financial sector. The financial sector plays an equal part in banking concerns, monetary policy, and providing financial services to clients in retail and commercial banking in Zambia.

2.4.Overview of Agriculture Trends

Zambia's agricultural sector is dominated by 1.6 million small-scale farmers, 73% of whom grow land that is no larger than two hectares. The vast majority of farmers in this group are likely to come from low-income households, as indicated by the average poverty rate of 80.5% for their households.

The Farmer Input Support Program (FISP) received more funding from the government; in 2015, 1.1 billion Kwacha, or 55% of the agriculture budget, was given to the program. The program's designated target groups are not benefiting from the increased allocation to FISP; in contrast, only 56% of small-scale farmers are receiving FISP fertilizer. The Food Reserve Agency purchased 78% of the corn in 2011 from large-scale farmers whose land was under cultivation (PMRC, 2015).

2.5.Government Support Structure and Policies

The policies and other significant variables that affect Zambia's agriculture sector's performance include labor restrictions, loan markets, land markets, social policies, macroeconomic factors, input and output markets, and technology use. All of these have an immediate effect on Zambia's agricultural development, as they do in the majority of other developing African nations (Juliet et al., 2016).

2.6. Related Studies

Similar research has been done all over the world, in Africa, and in Zambia particularly, with the goal of determining the variables that impact small-scale farmers' access to financing. The outcomes of these investigations have all been inconsistent. For example, Chandio et al. (2017) carried out a survey in Pakistan to determine the variables influencing financial access, focusing on the issue of which factor collateral or cash flow mattered most in relation to a farmer's ability to obtain financing. The study's findings demonstrated that factors such as income, gender, household size, education level, size of farm, farming experience, and availability of collateral all positively impacted a farmer's ability to obtain financing. However, the study also found that small-scale farmers' access to financing was negatively impacted by the age of the household head. In the end, the analysis showed that the only farmers who could get formal credit were those who had huge land holding sizes, significant incomes, and collateral. In a study on the variables influencing SMEs' ability to obtain financing, Osano and Languito in Mozambique discovered a connection between collateral requirements and financing availability. Additionally, Kiplimo et al. (2015) found that the household head's degree of education had a significant role in determining access to agriculture finance SHFs in their study evaluating the factors that affected smallholder farmers' access to finance in the Eastern part of Kenya. A similar study, Mbuba et al. (2018) carried out an analysis of the variables influencing the uptake of microfinance credit among smallholder coffee farmers in Kenya. The findings showed that the aforementioned country's microfinance credit uptake was significantly influenced by factors such

as access to extension services, gender of the household head, number of coffee trees, and experience farming coffee.

According to Lemessa and Gemechu's (2016) analysis of the variables influencing Ethiopian farmers' ability to obtain formal credit, 34.5% of small-scale farmers were able to obtain financing. The survey also showed that compared to male-headed households, female-headed households had less access to financing. Lemessa and Gemechu also noted that participation in extension package programs, attitudes toward risk, perceptions of loan repayment periods and procedures, lack of opportunity to take out second loans, and membership in farmer's multipurpose cooperatives were significant factors. Farmers' physical distance from lending institutions, family size, farm size, experience using credit from formal sources, sex of the household head, education level of the household head, and frequency of contact with development agents were also noted. Further, information availability, collateral, and income levels were shown to be important determinants when it came to credit access in another study by Korir (2013) that examined factors that affected credit access. The study also demonstrated the significance of asset ownership, prior credit participation, and proximity to credit providers in affecting credit finance access. A research done in Ghana, Jalil (2015) examined the factors that influence smallholder farmers' access to financing and how it affects food security. The findings showed that access to credit and, in turn, food security were positively impacted by a number of parameters, including age, the number of male-headed households, family size, education, farm size, and membership in farmer-based organizations. The author's findings also demonstrated the beneficial benefits of institutional elements on credit availability and food security, such as credit worthiness and guarantors. (Jalil, 2015). In a similar vein, Madafu (2015) investigated smallholder farmers' access to bank credit in Tanzania. The value of assets used for farming activities and education were found to be important factors influencing smallholder farmers' ability to obtain bank credit. Other major barriers to smallholder farmers' bank credit accessibility included high interest rates, proximity to banks, lack of collateral, and important bank information. Furthermore, it was discovered that smallholder farmers' performance was significantly impacted by their ability to obtain bank credit, as it affected their output as well as their ability to raise annual returns (Madafu, 2015). Adams (2015) determined the factors that influence farmers' investments in small-scale peri-urban agriculture in Ghana and their ability to obtain microcredit. The author's findings demonstrated that land ownership, the gender of the head of the family, the source of credit, and awareness of the credit services available all had a substantial impact on credit availability (Adams, 2015). Anang et al. (2015) evaluated the variables affecting smallholder farmers' access to agricultural microcredit while

they were still in Ghana. The findings indicated that the main household's gender, size, farm capital, ownership of cattle, and increased technology adoption were the important variables influencing loan availability (Anang et al, 2015).

Farmers in Zambia perceive financing to be hard to come by, expensive, and benefiting the larger corporate sector, according to the Zambia National Farmers' Union's 2009 assessment of the country's agriculture finance market (supply and demand). Bankers and Microfinance Institutions in Zambia, on the other hand, claimed that farm lending in Zambia was a risky and expensive endeavor. In Zambia, Sebatta et al. (2014) performed research on the factors that influence smallholder farmers' access to agricultural financing. It was discovered that the farmer's decision to access financing was highly influenced by the household head's education level, the size of the household, and the number of daily meals served.

It should be noted that the studies mentioned above emphasized the broad influences on small-scale farmers' access to financing. The relationship between agribusiness access to finance and its key determinants and alternative to finance, which are crucial in preparing the firm for agriculture finance, was not precisely examined in a quantitative manner. As a result, this study will take things a step further and examine both the quantitative and qualitative relationship between the key characteristics of Small-Scale Farmers and their access to financing and provide alternative financing options.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter begins by describing the research design followed by study area where this research was conducted. Next comes the development of sampling and data collection techniques to be used. Finally, the analytical framework of the research process and data analysis is presented. This study adopted both qualitative and quantitative approaches to address the research questions related to the financial access of agribusinesses in Zambia (posed in chapter 1).

Research design is important as it describes the plan on how data was collected, measured, and analyzed to answer the research question. It explains the temporal horizon, study environment, unit of analysis, and degree of inference the researcher has with the phenomena under investigation (Clark *et al*., 2021). Since the proper design is essential to accurately answering the study question, these decisions must be carefully considered (Creswell & Creswell, 2018; Sekaran & Bougie, 2019).

Since this research is aimed at the study of factors affecting agribusiness financing in Zambia, to help us increase our understanding of these factors and ascertain why there has been low uptake of financial services by SHFs and provide alternative sources of finance, a descriptive research design was adopted that led us to choosing a mixed design. The study design was a mixed methods as illustrated below in figure 3.1 and therefore gathered both qualitative and quantitative primary data using two tools; questionnaires for SHFs and Micro Finance owners / managers.

Figure 3.1 **Research Design**

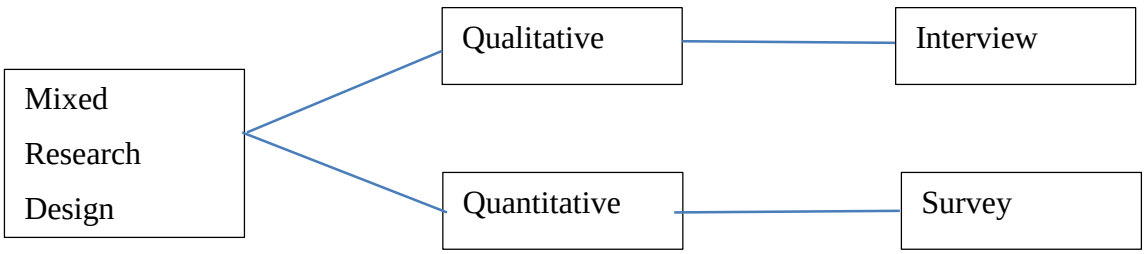

Figure 3. 3*: Research Design*

3.2 Study Area and Sampling Procedure

Zambia is a landlocked country located in the Southern African region. Further, Zambia is also referred to as land linked country because of the eight neighboring countries surrounding it which present readily available export market for various types of commodities originating from Zambia including agricultural products. This study used primary data collected from Smallholder farmers based in Chibombo district of Central Province and Micro financial operators in Zambia. Chibombo district was purposefully chosen due to the high level of agricultural activities in the area. Chibombo District, situated in Central Province, Zambia (Figure 3.1), is home to a population that was recorded at 293,765 individuals during the 2010 Zambian Census (Central Statistics Office, 2012), with a considerable rural percentage. Presently, the district's population stands at 44,315 (Zambia Statistics Agency, 2023a). In 2020, the Chibombo District Agriculture Commissioner's Office estimated that there were between 48, 000 and 55, 000 smallholder farmers spread into the 20 agricultural camps in the district. However, Central Province has experienced a rise in poverty incidence, surging from 56.2% in 2011 to a concerning 67.5% in 2022, reflecting a distressing trend in economic stability and living conditions within the region ((Zambia Statistics Agency, 2023b).

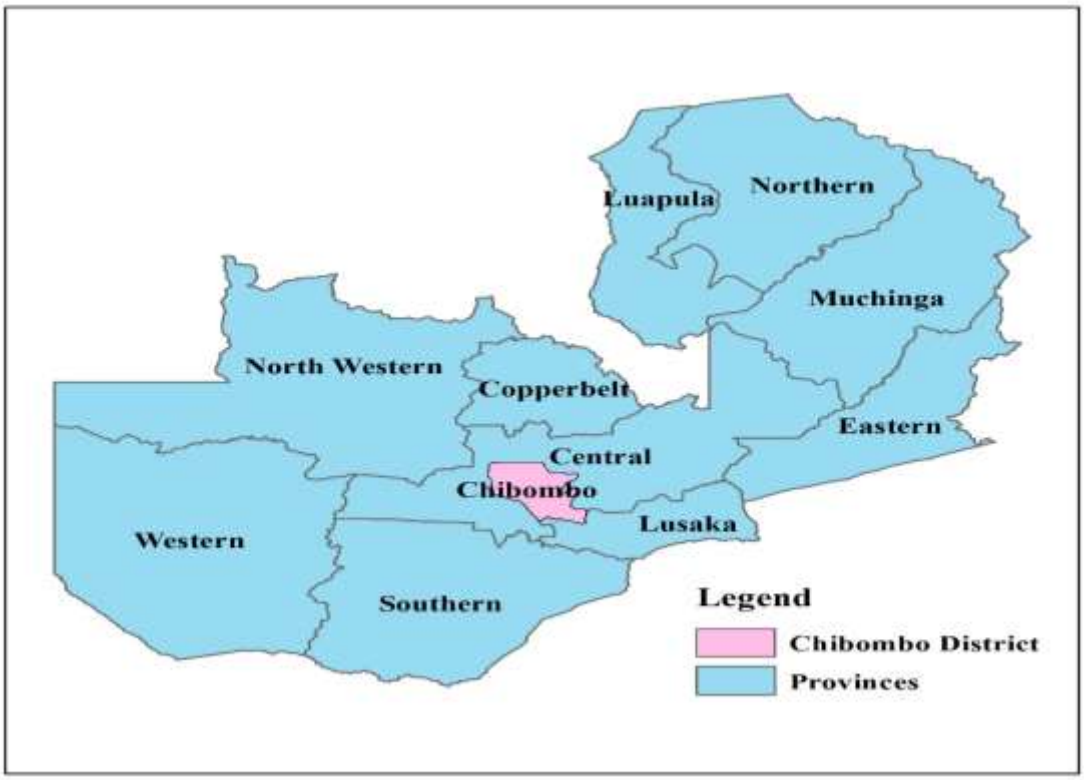

Figure 3. 4: Study Area

3.3. Sampling and Data Collection

Sampling is selecting a number of individuals from the target population for a study in such a manner that the individuals selected fairly and represent the larger population from which they were selected (Mugenda, 2012). It is imperative to select a sample size that is a representation of the population as this reduces the length of time and cuts on costs to be used during the study.

3.4. Sample size and Sampling Procedure

A two-stage sampling procedure (purposive and saturation) was used to ensure that each household had an equal chance of being selected for the sample. The sample size was based on qualitative principles of saturation, with the stopping criterion being defined as the number of additional interviews in which no new themes emerge. Therefore, a total of 100 smallholder farmers were sampled from a population of 48,000 to 55,000 smallholder farmers in the area.

3.5. Data Collection

Data collecting instruments, according to Creswel (2013), are equipment used in the gathering of data regarding a topic under investigation. One tool for conducting research that collects data from a broad sample is a questionnaire (Kombo and Tromp, 2016). The researcher conducted semi-structured interviews with smallholder farmers and financial services providers. At the end of each day, the data collected was synthesized and coded into appropriate themes. The research assistants were on hand to aid out as needed and to give the questionnaires. As a result, if the questions were unclear, the respondents asked for clarification. The respondents who were illiterate were assisted by the research assistants in expressing their ideas through writing. Below are some of the identified Micro Finance Companies from the desk research.

Table 3. 1 Micro Finance companies identified through the desk research. Source: Agri-ProFocus Zambia (APF), 2014

Name of MFI	Loan Portfolio	Average Loan Balance per borrower	No. of active borrowers
Vision Fund Zambia (VFZ)	$2,281,174	$263	8,690
FINCA Zambia	$11,539,892	$297	38,838
Pulse Financial Service Limited (PFSL)	$ 12,358,223	$754	16,398
Micro Bankers Trust (MBT)	$1,556,000	$92	16,929
Agora Microfinance Zambia (AMZ)	$1,726,241	$154	11,244

3.6. Pilot testing of the instrument

A pilot test is a small-scale experiment in which a small number of participants complete the test and provide comments and feedback regarding its mechanics. Prior to doing the actual research, the test determines the validity and reliability of the research instruments.

Pilot testing, according to Nachmias & Nachmias (2009), is a crucial stage in the research process since it highlights ambiguous questions and instructions in the instruments and also records significant responses' remarks and recommendations, which help the researcher optimize response rate by increasing the effectiveness of the instruments. Before the research began, a pretest and questionnaires were sent out to confirm the instruments' reliability. The SHFs in Chibombo district, where the sample size was derived, were the source of the sampled farmers for the pre-testing.

In order to test the Instruments, 20 SHFs from Chibombo district completed questionnaires. The respondents were selected using a simple random sampling technique from Chibombo district, the location of the study. The instruments were adjusted, modified, and improved in light of the findings to enable more reliability. In order to minimize respondent fatigue during questionnaire administration, during the pilot study, special attention was paid to questions that caused discomfort for the respondents.

3.7. Validity of the instrument

Orodho (2009) states that validity is the degree to which results from data analysis actually exemplify the phenomenon being studied, and rationality is the degree to which a test fits what it should measure. Before the actual research began, the researcher examined the instruments with the help of an expert and, in this case, the supervisor, to see whether the test's content was legitimate and could measure the things it claimed to measure. We looked at the questions to see if they assessed the two things that were supposed to be measured: the respondents' comprehension of the questions and their language simplicity. Questions that turned out to be unclear, ambiguous, or confusing were eliminated, and the questionnaire was updated accordingly.

3.8. Reliability of the instrument

The consistency of a measurement or the extent to which an instrument measures consistently when used with the same individuals and under the same conditions is known as reliability (Trochim, 2016). Another factor that is considered dependable is the repeatability of a measurement, which is demonstrated by a person's score being similar after taking the same test twice. Numerous methodologies, such as the split-half method, internal consistency technique, test-retest method,

inter-rate reliability technique, and test-retest methodology, can be used to assess the reliability of research instruments.

The test split-half approach was used in this study to examine the dependability of the data collection instruments. This method was quicker and devoid of carry-over effects because the test was not repeated. Twenty SHFs in Chibombo district were given the identical questionnaire, and they were divided in half to form two groups of ten SHFs each in order to calculate the coefficient for this kind of reliability. Results from the questionnaires were predicted to be connected. The study then used the coefficient alpha using ATLAS.ti to determine the reliability coefficient and discovered that the correlation between the two groups was 0.8.

3.9 Data Analysis

3.9.1 Qualitative data analysis

Interviews was transcribed verbatim with annotations for behavior. The transcripts was then coded into appropriate, clearly defined themes, which was grouped and summarized to ensure that related ideas are categorized together. The summarized code was synthesized into a descriptive theory. The qualitative coding and analysis was done using ATLAS.ti qualitative analysis software.

3.9.2 Analytical Framework

This study used a multiple logistic regression model because the analysis is based on a categorical dependent variable (i.e. either the farmer has access to financing or not). Logistic regression is a form of regression that relaxes the assumption about the metric nature of the dependent variable and also provides a variety of diagnostic and explanatory techniques for non-metric dependent variables (Hair Jr. et al., 1995).

In general, logistic regression is unrestricted and it is capable of analyzing all types of independent variables (continuous, discrete, and dichotomous) (Tabachnick & Fidell, 2007). Additionally, the variety and complexity of data sets that can be analyzed are almost unlimited (Tabachnick & Fidell, 2007).

Unlike multiple regression methods, there are no assumptions about the distribution of the predictor variables (such as normality, linearity, or equal variance) (Tabachnick & Fidell, 2007). The outcome variable must be discrete and if it is continuous it must be converted to a discrete variable (Tabachnick & Fidell, 2007). The model generated by logistic regression is nonlinear and the outcome variable, Y, is the probability of achieving one outcome or another based on the nonlinear function of the best

linear combination of predictors, with two results. By estimating the probability of financial access for a binary choice variable (Y) using a logit model, a probability index is formed. The simple logistic regression model has the form (Agresti & Finlay, 2009; Peng & So, 2002):

$$\text{In}\left(\frac{\pi}{1-\pi}\right) = \log(\text{odds}) = \text{logit} = \alpha + \beta x$$

This formula uses the log of odds, called the logistic transformation or logit in short format. The logistic regression equation can also be expressed directly in terms of the probability of success. Taking the antilog from both sides, we derive the equation to predict the probability of the outcome we are interested in (Peng & So, 2002):

$$\pi = \text{Probability (Y)} = \frac{e^{\alpha+\beta x}}{1+e^{\alpha+\beta x}}$$

Where π is the probability of the outcome of interest (y=1); α is the Y intercept (constant of the equation); βs are the regression coefficients of the explanatory variables (vector ofœefficients to be estimated); Xs are a set of predictors and e is the base of the system of the natural logarithms (Peng & So, 2002).

The factors affecting financial access mentioned above will be used as independent variables for the logistic regression model. The logistic regression model will have a binary dependent variable: which will take the value 1 in case farmers have access to finance and 0 otherwise. Extending simple logistic regression to multiple predictors produces a complex logistic regression for Y (the logistic regression function is a logarithmic transformation) as follows (Agresti & Finlay, 2009; Peng & So, 2002):

$$logit\,(Y) = In\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots\ldots + \beta_n X_n$$

Y: is the outcome of interest (access to finance) and is either equal to1 when farmer has accessed finance or equal to 0 otherwise.

π: probability of farmer accessing finance,

β: coefficient of the various factors affecting access to finance,

X: vector of various factors affecting access to finance which canbe dichotomous or continuous.

The coefficient estimation procedure is a maximum likelihood procedure and the goal is to find the best linear combination of predictors that maximizes the probability of obtaining the observed outcome frequency (Tabachnick & Fidell, 2007).

3.10 Ethical Consideration

In order to acknowledge and support the views of other authors and sources, references were added. The goal of the study was satisfactorily and unambiguously communicated to the respondents by the researcher and his helpers. Prior to initiating data collection, the researcher obtained consent from the participant to engage in voluntary participation in the study.

The investigator reassured the participants that the data they submitted would be treated with extreme confidentiality and used exclusively for study. The University of Zambia's Directorate of Research and Graduate Studies ethical approval and introductory letters were intended to reassure the responders that the information being gathered is solely being used for educational purposes. This study was conducted with due diligence to prevent plagiarism by making sure that all sources utilized in the proposal and research report were properly cited and completely acknowledged.

3.11 Chapter Summary

The study integrates both approaches to comprehensively explore the complexities of financial access among smallholder farmers. Qualitative methods enable an in-depth understanding of experiences and perspectives, while quantitative methods like logistic regression offer statistical insights into the relationships between factors and financial access, providing a more comprehensive view of the issue.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter commences by providing an insightful overview of the socioeconomic characteristics of the smallholder farmers who actively took part in the study. Subsequently, it presents the results and in-depth discussion derived from empirical analysis, shedding light on the pivotal factors that significantly influence smallholder farmers' access to finance. The factors scrutinized encompass household size, age, and number of years engaged in farming, and annual income.

4.2 Response Rate

For this study, a total of 100 households were randomly selected to participate in the survey. All 100 sampled households willingly and actively participated, leading to a 100% response rate. The high response rate is a testament to the engagement and cooperation of the selected households, ensuring a robust and comprehensive dataset for analysis. With a complete set of responses from the surveyed households, the study can confidently draw conclusions and make inferences that reflect the perspectives and characteristics of the broader population. This response rate strengthens the study's reliability and allows for more confident and accurate findings in exploring the research objectives.

4.3 Demographic Characteristics

The demographic findings in this section are derived from the respondents' gender, age, years of experience in farming, and annual income. These results play a crucial role in assessing the experience, capacity, and performance of the respondents in terms of their access to finance.

4.3.1. Respondents Gender

The survey respondents' demographic profile provides valuable insights into the composition of the study's participants and holds significance in understanding their access to finance. The data indicates a notable gender disparity, with males comprising a substantial majority at 74%, while females represent a smaller proportion of 26%.

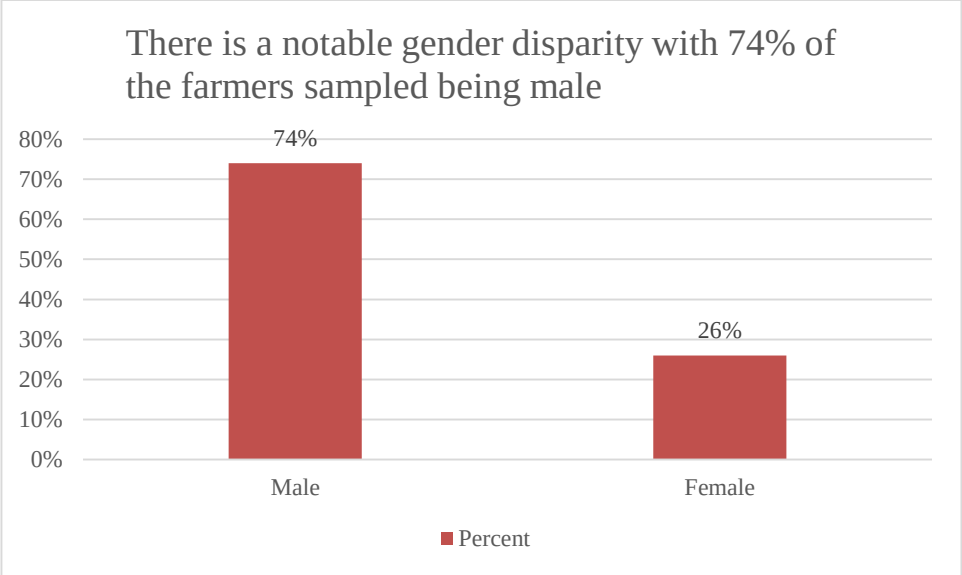

Figure 4. 6 Gender distribution of respondents

4.3.2 Age

The farmers' age ranged from 26 to 64 years, with an average age of 40.76 years for the entire group. Further examination of age reveals that male respondents have an average age of approximately 40.8 years, while female respondents' average age is around 40 years.

4.3.3 Marital status

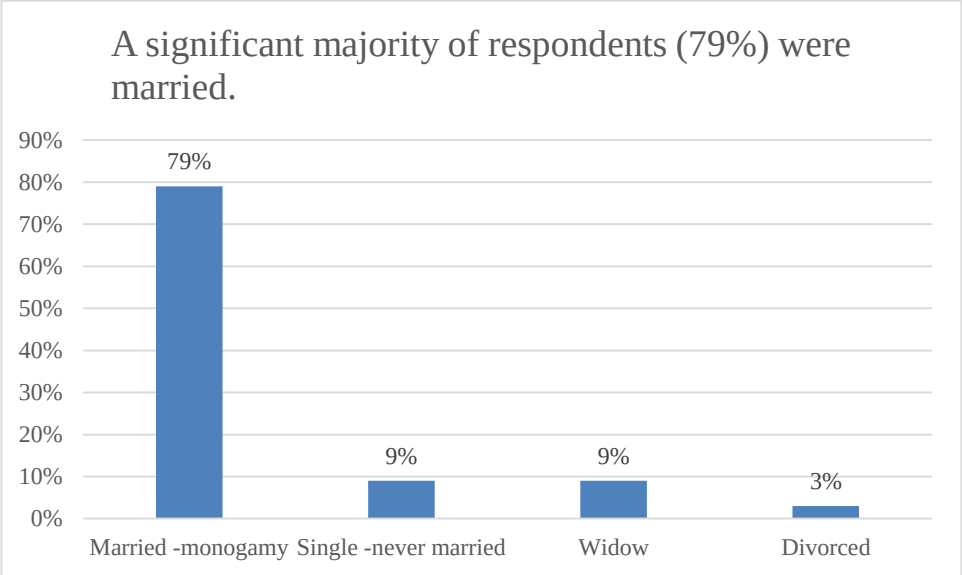

Figure 4. 7 Respondents marital status

The study delved into the marital status of the participants. Interestingly, a significant majority, comprising 79% of the respondents, were married, suggesting that this demographic constitutes a

prominent group in the sample. Additionally, 9% of the participants were identified as single, while 3% reported being divorced. The study also highlighted that 9% of the respondents were widows, indicating the presence of vulnerable groups among the surveyed population.

4.3.4 Household size

The study also investigated household sizes among the surveyed farmers. The size of the households varied significantly, ranging from 2 to 15 members. On average, each household consisted of 6.67 members, with a standard deviation of 2.828624. This wide range indicates the varying family sizes represented in the study.

4.3.5 Income

Among the 100 households surveyed, data on annual income was available for 90 households. The reported annual incomes spanned from ZMW 12.00 to ZMW 150,000.00. The mean annual income for these households was ZMW 27,615.97, with a standard deviation of ZMW 31,374.11. These findings provide crucial insights into the income distribution among smallholder farmers, helping them to understand their financial capacity and potential challenges in accessing finance.

Table 4. 1 Average household income

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
Annual income	ZMW 27,615.97	ZMW 31,374.11	ZMW 12.00	ZMW 150,000.00

Understanding the demographic composition of the survey respondents lays the foundation for comprehending their financial landscape. Factors such as gender, age, and marital status can significantly influence the level of access to finance they experience. For instance, gender disparities may lead to differential treatment in financial institutions, affecting one's ability to obtain loans or access other financial services. Similarly, age and marital status can play a role in determining financial responsibilities and commitments, impacting financial decision-making.

4.4 Farm Business Management

4.4.1 Business size

The size of the farming enterprises among the surveyed households was assessed through multiple indicators. The mean annual income was ZMW 27,615.97, indicating the average income generated by the surveyed households. However, the substantial standard deviation of ZMW 31,374.11

indicated significant variability in income levels among the farmers.

In terms of employment, 98 out of the 100 households reported having full-time employees. The number of full-time employees per household varied from 0 to 7, with an average of 1.020408 fulltime employees per household. The standard deviation of 1.605272 further indicated variations in the size of the labor force employed by the farming enterprises.

Additionally, all 100 households provided information on the number of part-time employees. The number of part-time employees ranged from 0 to 25, with an average of 2.45 part-time employees per household. Similar to the fulltime employees, the standard deviation of 3.655285 suggested differences in the extent of part-time labor utilized across the surveyed farming businesses.

Table 4. 2 Farm business size indicators

Variable	**Number of respondents**	**Mean**	**Std. Dev.**	**Min**	**Max**
Number of year in farming	100	34.93	199.6235	1	2009
Annual income	90	ZMW 27,615.97	ZMW 31,374.11	ZMW 12.00	ZMW 150,000.00
# of fulltime employees	98	1.020408	1.605272	0	7
#of part time employees	100	2.45	3.655285	0	25

Overall, the data on annual income and the number of full-time and part-time employees offer insights into the size and scale of the farming enterprises. The wide range of annual incomes and employment levels indicate the varying magnitudes and complexities of these agricultural businesses, highlighting the importance of tailored approaches and support to address their specific needs and challenges.

4.4.2 Business Registration

None of the farm businesses surveyed in this study were registered. The reasons cited by the respondents for not registering their farming businesses were varied and encompassed several key factors. One primary factor mentioned by the participants was the scale of their farming operations. Many respondents indicated that their businesses were still on a small scale or not yet stable, which might have influenced their decision to delay the registration process. Another prevalent reason was the lack of knowledge and information about the registration procedures. Many farmers expressed uncertainty about where to go to register their businesses or stated that they had no idea about the registration process. Additionally, land tenure issues, particularly related to traditional land, were

cited as a barrier to registration. Some respondents mentioned farming on traditional lands where title deeds were not available, making the registration process more challenging. The avoidance of taxes emerged as another reason for not registering their farming businesses, with some farmers expressing a desire to avoid tax liabilities.

The range of reasons provided by the respondents indicates that there are various obstacles preventing smallholder farmers from registering their businesses. Addressing these challenges would require tailored solutions, such as providing accessible information about registration procedures, simplifying the process, and addressing specific concerns related to traditional land issues. Additionally, efforts to increase awareness about the benefits of formal registration and the support available for small businesses could encourage more farmers to register their farming enterprises.

4.4.3 Decision Makers for Farming Activities

In terms of decision-making within the households, the results indicated that the household head made decisions on what to plant and who to sell to in 83% of the households surveyed. Additionally, in 2% of the households, the spouse played a role in making such decisions. Other adult male and female household members accounted for 7% and 8% of the decision-making, respectively.

Table 4. 3 Household decision making dynamics

Who makes decisions on what to plant and who to sell to?	**Freq.**	**Percent**
Household head	83	83
Spouse	2	2
Other adult male household members	7	7
Other adult female household members	8	8
Total	**100**	**100**

4.4.4 Spouse and Children Involvement in the Business

Regarding involvement in the farming business, 79% of the farmers reported that their spouses actively contributed to the business, while 21% stated that their spouses did not participate. Furthermore, out of the 100 households surveyed, 76% reported that their children or dependents contributed to the farming activities, while the remaining 24% did not involve their children in the business. Among those who had children or dependents contributing, 3.95% reported paying them for their contributions.

4.5 Financial Management Practices among Smallholder Farmers

The study delved into the financial management practices of smallholder farmers (SHFs) to gain valuable insights into how they manage their finances.

4.5.1 Access to Formal Banking Services

The study also shed light on challenges related to accessing formal banking services. Only 8% of the respondents specifically mentioned having traditional bank accounts. This lower percentage might be attributed to obstacles faced by smallholder farmers, such as meeting minimum balance requirements and dealing with transaction fees. Understanding these challenges can inform policymakers and financial institutions in developing targeted solutions to enhance financial access and inclusion for SHFs.

4.5.2 Banking Trends and Mobile Money Usage

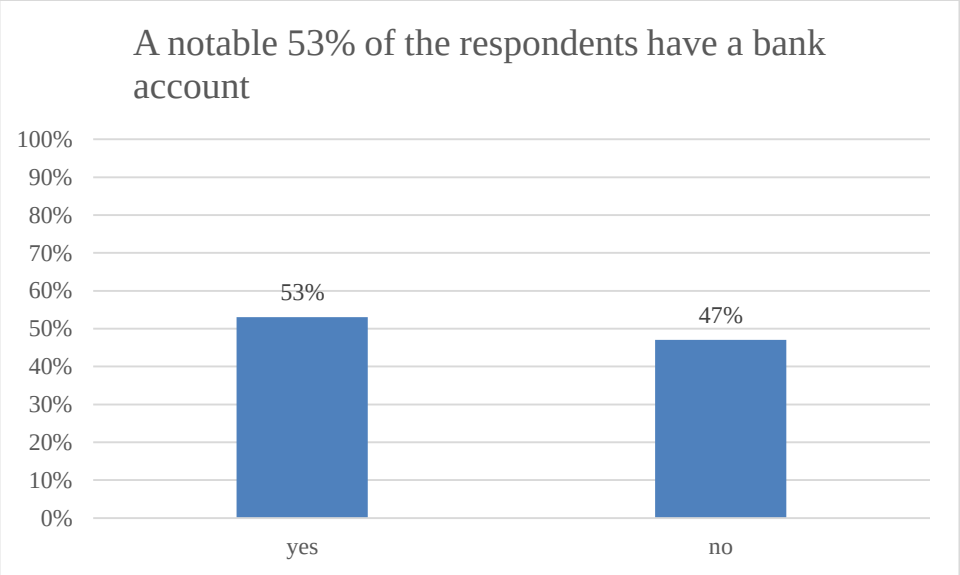

Figure 4. 8 Banking Trends and Mobile Money Usage

Among the respondents, a notable 53% of farmers reported holding bank accounts, while the remaining 47% did not possess such accounts. Interestingly, approximately half of the SHFs (50% of respondents) preferred to utilize mobile money accounts, showcasing the convenience and accessibility of these platforms in rural areas. This choice provides farmers with a secure and efficient means to manage their finances, contributing to improved financial inclusivity in the agricultural sector.

4.5.3 Informal financial management mechanism

The study findings provide valuable insights into the participation and access to savings groups for smallholder farmers. The study indicates that a substantial majority of the respondents, accounting for 86%, were not part of any savings group. On the other hand, only 14% of the respondents reported themselves being members of savings groups.

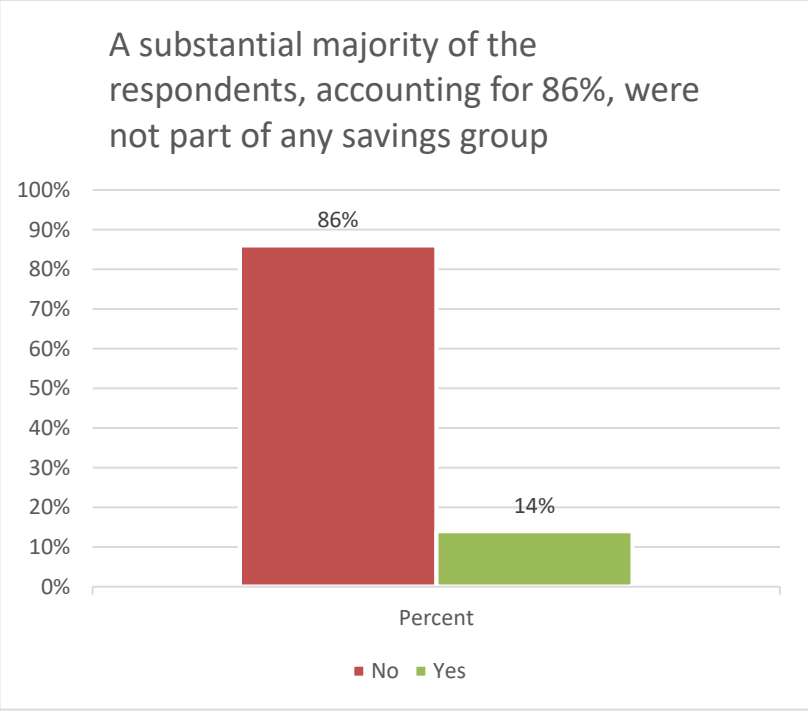

Figure 4. 9 Respondents participation in savings groups

These findings underscore the need for further exploration into the factors influencing farmers' decisions to join savings groups and the potential benefits and challenges associated with participation. By understanding the barriers to participation, policymakers and stakeholders can develop targeted strategies to promote greater involvement in savings groups and enhance financial security and risk management for smallholder farmers. Additionally, exploring the reasons behind the limited access to shared facilities within existing savings groups can lead to improvements in group dynamics and services, ultimately benefiting farmers and fostering greater financial inclusivity in the agricultural sector.

4.5.4 Financial Management

Another notable aspect observed in the study was the financial practices relating to physical storage. A significant portion of SHFs (27% of respondents) still opted to keep their money at home, possibly

driven by the sense of familiarity and immediate access to funds when needed. Moreover, 15% of the respondents chose to keep their money in savings groups, indicating the popularity of collaborative financial management approaches among certain farmers. These findings underscore the importance of considering farmers' preferences and behaviors when designing financial services tailored to their needs.

4.5.5 Co-mingling Funds and Prudent Financial Separation

A critical finding from the study reveals that 48% of the respondents reported keeping both their business and personal money in the same place. However, this practice may pose challenges in accurately tracking business finances and could potentially lead to financial mismanagement. On a positive note, the majority of the farmers recognized the significance of separating personal and business finances. Embracing this prudent approach allows for greater financial clarity and empowers farmers to monitor the financial health of their agricultural enterprises more effectively.

The study's results emphasize the diverse range of financial management practices among smallholder farmers, influenced by factors such as access to formal banking services, convenience, trust in mobile money platforms, and the importance of financial separation between personal and business funds. Understanding and addressing these practices are vital in designing tailored financial education and support programs to assist smallholder farmers in optimizing their financial management and enhancing their overall economic well-being.

4.6 Access to credit and risk management

4.6.1 Access to credit

Based on a sample of 100 farmers, their access to credit and experiences with different financial institutions were analyzed.

The amount borrowed from various sources was examined, and it was found that out of the 100 farmers, 19 farmers had borrowed money. The mean amount borrowed was ZMW 5,247.37, with a standard deviation of ZMW 4,674.92. The smallest loan borrowed was ZMW 300.00, while the largest loan was ZMW 20,000.00.

Table 4. 4 Credit accessed by respondents

Variable	Number of respondents	Mean	Std. Dev.	Min	Max
Amount borrowed	19	ZMW 5,247.37	ZMW 4,674.92	ZMW 300.00	ZMW 20,000.00

Regarding loan repayment, all 19 farmers who had borrowed money reported that they had successfully repaid their loans, indicating a 100% repayment rate among the sampled farmers.

When asked about their awareness of other institutions where they could access financing for their agricultural businesses, 56% (56 farmers) responded positively, indicating that they were aware of alternative sources of finance. In contrast, 44% (44 farmers) stated that they were not aware of any other institutions offering financial support.

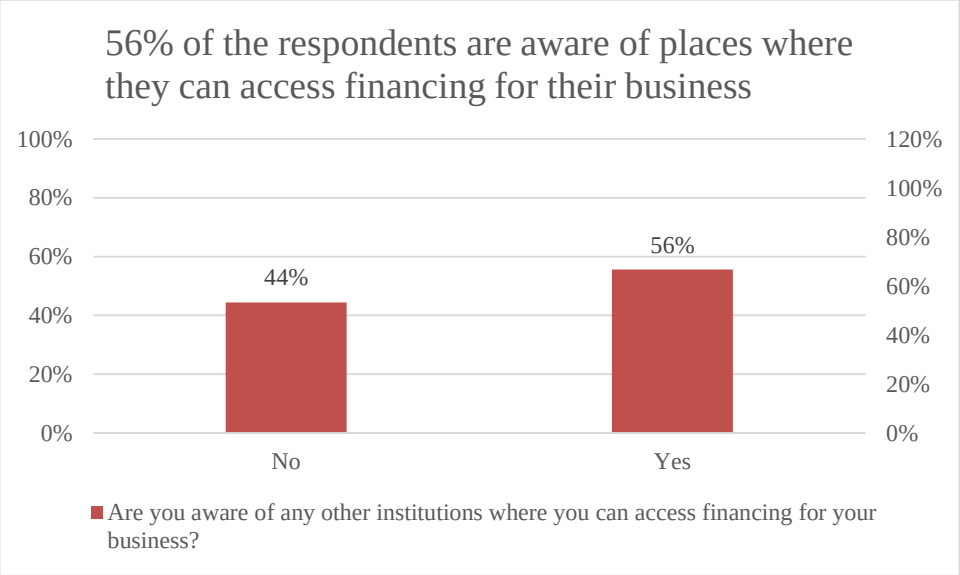

Figure 4. 10 Respondents knowledge on where to access credit

Out of the 100 farmers, 6% (6 farmers) reported attempting to access finance from a different institution. However, only 17% (1 farmer) of these attempts were successful, while 83% (5 farmers) were unsuccessful in securing funds from alternative sources.

Among those who were unsuccessful in obtaining finance, the reasons cited were as follows: 20% (1 farmer) reported that guarantors were unavailable, another 20% (1 farmer) mentioned facing long and cumbersome procedures, while 40% (2 farmers) found the conditions offered by the institutions were not favorable. Additionally, 20% (1 farmer) stated that they were unable to provide sufficient surety for the loan.

The findings suggest that while a portion of the farmers sampled had borrowed money successfully,

a significant proportion was not aware of other financial institutions offering credit. Moreover, those who attempted to access finance from different institutions faced challenges, including difficulties with guarantors, lengthy procedures, and unfavorable conditions. Understanding these aspects is crucial for improving farmers' access to credit and supporting their agricultural ventures effectively.

4.6.2 Factors affecting access to credit

Several factors were hypothesized to influence smallholder farmers' access to finance. This investigation aimed to address the second objective of the study, which was to identify the key determinants affecting the financial access of smallholder farmers in Zambia. To accomplish this, a logistic regression model was employed, using financial accessibility as the dependent variable, and considering gender, age, and income as the independent variables.

In order to ensure the reliability of the results, rigorous model diagnostics were conducted to detect potential model specification errors and assess the validity of the chosen regression model. This thorough analysis helped to strengthen the credibility of the findings and provide meaningful insights into the factors impacting smallholder farmers' access to financial resources in Zambia.

Table 4. 5 Logistic Regression Results

Logistic regression					Number of obs =	100
					LR chi2(2) =	0.68
					Prob > chi2 =	0.7132
Log likelihood = -48.284368					Pseudo R2 =	0.007
borrowed	Odds Ratio	Std. Err.	z	P>z	[95% Conf. Interval]	
gender	0.4100844	0.3323014	-1.1	0.271	837768	2.007348
age	0.9709352	0.0367731	-0.78	0.436	0.9014714	1.045752
income	1.000009	0.00000822	1.08	0.278	0.9999928	1.000025
_cons	1.427881	2.582176	0.2	0.844	0.0412459	49.43138

Gender:

The coefficient for gender is -0.59 (expressed as an odds ratio of 0.4101). This coefficient indicates that, holding all other variables constant, being female (gender=2) decreases the odds of borrowing money by approximately 59.9% compared to being male (gender=1). However, the p-value for gender is 0.271, which is greater than the typical significance level of 0.05. Therefore, the effect of

gender on borrowing is not statistically significant at this level.

Age:

The coefficient for age is -0.029 (expressed as an odds ratio of 0.9709). This coefficient suggests that, holding all other variables constant, a one-unit increase in age leads to a decrease in the odds of borrowing money by approximately 2.91%. However, the p-value for age is 0.436, which is greater than 0.05. Therefore, the effect of age on borrowing is not statistically significant at the 0.05 level.

Income:

The coefficient for income is 0.000009 (expressed as an odds ratio of 1.000009). This coefficient implies that, holding all other variables constant, a one-unit increase in income leads to an increase in the odds of borrowing money by approximately 0.0009%. The p-value for income is 0.278, which is greater than 0.05. Hence, the effect of income on borrowing is not statistically significant at the 0.05 level.

Constant term (Intercept):

The coefficient for the constant term is 0.356 (expressed as an odds ratio of 1.4279). This coefficient represents the estimated odds of borrowing money when all other variables in the model are zero or at their reference levels. The p-value for the constant term is 0.844, which is greater than 0.05. Therefore, the constant term's effect on borrowing is not statistically significant at the 0.05 level.

In summary, based on the logistic regression results, none of the variables (gender, age, income) have a statistically significant impact on the likelihood of borrowing money at the 0.05 significance level. However, it's important to note that the p-values for gender and income are relatively close to the significance level, suggesting the need for further investigation with a larger sample size or additional variables.

4.6.3 Risk Management

The business risk management practices of the surveyed farmers were examined to understand how they dealt with financial risks in their farming operations.

Out of the 98 respondents, 91% (89 farmers) reported that their farming businesses had faced financial risks since the time of their establishment, indicating that dealing with risk is a common aspect of running a farming enterprise.

Regarding specific risk management strategies, when asked if they borrowed money as a risk management approach, 40% (38 farmers) selected this option, while 60% (57 farmers) did not.

Similarly, 25.26% (24 farmers) reported that they sold assets as a strategy to manage risks, while the majority, 74.74% (71 farmers), did not engage in this approach.

Interestingly, none of the surveyed farmers reported using insurance as a risk management tool. It is worth noting that 27.37% (26 farmers) stated that they did nothing specific as a risk management strategy.

Combining all the risk management practices, 43% (38 farmers) borrowed money, 27% (24 farmers) sold assets, and none used insurance. Additionally, 29% (26 farmers) chose not to implement any specific risk management strategy.

In terms of the number of risk management strategies employed, 27% (27 farmers) did not utilize any particular approach, while 58% (58 farmers) adopted a single risk management strategy. Only 15% (15 farmers) reported using two risk management strategies simultaneously.

The data suggests that the majority of the farmers have encountered financial risks in their farming businesses, and while borrowing money and selling assets are common risk management practices, insurance and other strategies appear to be less prevalent among the surveyed farmers. The findings underscore the importance of understanding and implementing effective risk management measures to navigate uncertainties and enhance the resilience of farming enterprises.

4.7 Supply side factors affecting access to credit

This section presents the findings and outcomes derived from the analysis of supply-side data collected through interviews conducted with representatives of five Micro Finance companies: FINCA, Mofin Finance, GS Cash, Agora Microfinance, and Lupiya. The data reveals crucial insights into collateral requirements, financing decision-making processes, tailored products for farmers, and the challenges faced when financing smallholder farmers.

Table 4. 6 Financial Services Providers interviewed

Institution	**Product offerings**	**Key customers**	**Tailored smallholder farmer products**
FINCA	Retail business and industrial loans	Retails businesses and commercial businesses	No
Mofin Finance	Salary advance	Government Employees and Private Sector Employees	No
GS Cash Advance	Salary advance	Civil Servants	No
Agora	Loans, insurance, and	Predominantly the undeserved	Yes

Mircofinance	mobile money facilitation	rural agricultural farmer, so small to medium enterprises businesses	
Lupiya	Personal loans, working scheme loans and business working loans	Formal salaried persons and medium business enterprises	Yes

4.7.1 Collateral Requirements

The examined microfinance companies employ specific collateral requirements for loan applicants. These requirements include formal business registration and a comprehensive assessment of business viability. Furthermore, applicants are expected to provide documentation such as the most recent bank statement, the latest pay slip, the original National Registration Card (NRC), and proof of residence. Notably, non-collateral salary advances are considered, and if land ownership is significant, alternative valuable assets are also accepted as collateral. In-depth business viability evaluations are conducted, particularly for women clients who undergo training. The assessment involves scrutiny of active pay slips and business invoices to ascertain the viability of their enterprises.

4.7.2 Tailored Products for Farmers

Two out of the five microfinance companies, namely Agora Microfinance and Lupiya, have introduced tailored financial products designed explicitly for farmers. Among these offerings is a small group lending mechanism in which the farmer group collectively guarantees the repayment of loans. Moreover, Agora Microfinance operates a comprehensive program to empower women in business management. This program includes training participants to formulate sound business plans, rigorously testing these plans, and subsequently disbursing funds based on the assessed viability of the plans.

4.7.3 Agora Microfinance's Emphasis on Smallholder Farmers

A significant revelation from the research is Agora Microfinance's pronounced emphasis on catering to the financial needs of smallholder farmers. The analysis indicates that approximately 70% of Agora Microfinance's clients fall within the smallholder farmer category. This strategic focus underscores Agora's commitment to addressing the unique financial requirements and challenges faced by this demographic.

4.7.4 Financing Decision-Making Criteria

The microfinance companies' decision-making processes for granting loans hinge on several key criteria. Primarily, the client's ability to repay the loan within the stipulated timeframe is evaluated. This assessment is informed by a thorough examination of the client's bank statements and pay slips. Additionally, land ownership and the ability to generate a consistent and sustainable yield are central factors. The companies also consider the viability of the client's business model, thereby ensuring that funds are allocated to ventures with potential for growth and repayment.

4.7.5 Challenges in Financing Smallholder Farmers

The study has unearthed a multitude of challenges associated with financing smallholder farmers. These challenges include the inherent risk tied to unpredictable farming yields, which often do not align with the financial obligations of loan repayments. Furthermore, the assessment of credit history plays a pivotal role in determining an applicant's eligibility for financing, with careful scrutiny of their Credit Reference Bureau (CRB) report and the cleanliness of their bank statement. The risk exposure associated with specific crop choices, such as maize, is noted, as these choices are influenced by external political factors that can affect profitability. Technical knowledge gaps in farming practices and crop management are identified as potential barriers to financial success. Lack of cooperation among individuals seeking loans, inadequate record-keeping practices, and the prevalence of land ownership issues, particularly the absence of proper land titles, further contribute to the complexities of financing smallholder farmers.

CHAPTER FIVE

SUMARY OF FINGS, DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The core objective of this research was to address a triad of inquiries pertaining to smallholder farmers' access to finance.

Primarily, this study embarked on the task of ascertaining the precise proportion of smallholder farmers across the nation who currently enjoy access to various forms of financial assistance. By delving into this aspect, the researchers aimed to gauge the extent of financial inclusivity within this critical sector.

Secondarily, the study directed its attention towards unraveling the multifaceted factors that exert influence on the capacity of smallholder farmers to secure financial support. Through a comprehensive exploration of these factors, the research sought to shed light on the complexities that underlie financial access for smallholders.

Lastly, the study explored the landscape of alternative financing options available to smallholder farmers. By examining innovative approaches beyond traditional banking services, the research aimed to uncover potential avenues that could empower farmers to overcome the barriers they face in accessing finance.

Transitioning from the theoretical framework to empirical findings, the preceding chapter of this research presented a synthesis of outcomes derived from in-depth interviews conducted with smallholder farmers in the Chibombo District. These insights were complemented by perspectives gathered from financial services providers, thus establishing a well-rounded perspective on the challenges and opportunities at hand.

Building upon the insights garnered, this chapter critically analyzes the implications encapsulated within these findings. Moreover, it extrapolates actionable recommendations for improving smallholder farmers' access to finance. By bridging the gap between theory and practice, this research contributes to the discourse on fostering financial inclusion and sustainability within Zambia's vital agricultural sector.

5.2 Implications of Demographic Factors on Financial Access among Smallholder Farmers

The demographic profile of the sampled smallholder farmers reveals potential disparities in access to finance based on gender, although the statistical significance might not have been explicitly demonstrated. Women in agriculture might face barriers in obtaining loans or might receive lower loan amounts compared to men due to cultural, legal, or economic reasons. While the specific impact of age on financial access might not have been explicitly outlined, age can influence technological adoption, credit history, and financial stability, impacting access to financial services. Understanding these demographic dynamics is crucial for devising tailored financial products, policy interventions, and targeted support to ensure equitable access to finance among smallholder farmers.

5.3 Smallholder farmers' access to finance

The investigation at hand undertook a comprehensive examination of the financial landscape for smallholder farmers, considering three primary financial channels: traditional banks, mobile money services, and informal financial mechanisms, including savings groups. The study's findings shed light on the prevailing challenges and disparities in accessing formal financial services within this demographic.

It is evident from the research that access to formal banking services remains limited among smallholder farmers. The data revealed that although 53% possess bank accounts, a mere 8% actively engage with these accounts for financial transactions. Furthermore, a minor 14% of farmers make use of informal financial mechanisms, such as savings groups, as an alternative means of accessing financial services. These figures underscore the significant gap that exists in the utilization of both formal and informal financial avenues among smallholder farmers.

Another pivotal aspect highlighted by the study pertains to the constrained access to credit within this demographic. Merely 19% of the farmers surveyed reported having accessed credit, revealing a considerable hurdle in their efforts to secure financial resources for enhancing agricultural activities and livelihoods. Notably, these findings resonate with the observations of other researchers, including the Finscope 2020 study, which similarly identified limited financial access among farmers in Zambia. The alignment of our findings with these established research outcomes emphasizes the consistency and gravity of the challenges faced by smallholder farmers in the realm of financial inclusion. This result is similar to studies done by Siwale (2018) and CABRI (2014) who found that only 14.1% and 13% of smallholder farmers in Zambia have access to finance, respectively.

These findings prompt an exploration into the underlying factors contributing to the constrained

access to finance among smallholder farmers. The subsequent sections of this thesis delve into a comprehensive analysis of these factors, encompassing socio-economic constraints, geographical barriers, institutional limitations, and technological disparities. Through an intricate exploration of these factors, the study aims to offer a holistic understanding of the multifaceted dynamics that hinder financial accessibility for smallholder farmers. By illuminating these factors, the research seeks to lay the groundwork for informed interventions and policy recommendations that can effectively address the prevalent challenges and enhance the financial prospects of this crucial segment of the agricultural community.

5.4 Factors affecting smallholder farmers' access to finance

5.4.1 Access to financial services

Within the context of smallholder farmers' financial access, the geographical challenge emerges as a central and persistent obstacle. The proximity to financial institutions, or rather the lack thereof, plays a pivotal role in shaping the extent to which these farmers can engage with formal financial services. A significant barrier identified in this study is the considerable distance that separates rural farmers from financial institutions, which are predominantly situated in urban areas. This physical divide creates a substantial hurdle for rural farmers seeking access to financial services, impeding their ability to engage with formal banking. This aligns with Siwale's (2018) study in Zambia, which found that the distance between the farm location and the nearest town is a crucial determinant of farmers' ease in accessing finance. The longer the distance, the higher the transaction costs that both lenders and borrowers face. Consequently, farmers' chances of accessing finance are lower, and this underscores the pressing need to address geographical barriers for enhanced financial inclusion.

This geographical disparity is notably reflected in the statistics, where a mere 8% of the farmers surveyed actively utilize formal banking services. The pronounced underrepresentation of formal banking users among rural farmers further underscores the challenge they face in reaching financial institutions. This limited engagement is accompanied by a noteworthy trend: a heightened preference for mobile money services. The study revealed that 100% of the farmers possess a mobile money account. This trend signifies the shift towards embracing technology-driven financial solutions as an alternative to traditional banking services.

The surge in mobile money adoption among smallholder farmers can be attributed to the convenience it offers. The accessibility of mobile money services transcends geographical constraints, empowering rural farmers to engage in financial transactions without the need to travel substantial

distances. This heightened convenience transforms mobile money into a vital financial instrument for smallholder farmers, facilitating not only basic transactions but also enabling more complex financial interactions. This trend aligns with findings from Findex Global (2017), which revealed that 58% of adults who earned income from agricultural sales had access to an account, compared to about 35% in 2014. This growth can be attributed to the expanded access to mobile money services in Zambia, emphasizing the pivotal role of technological advancements in enhancing financial inclusivity for rural communities.

The implications of these findings have a profound scope. The increasing reliance on mobile money suggests a potential transformation in dismantling the barriers to financial inclusion for rural farmers. By harnessing the convenience and accessibility of mobile money, financial institutions and policymakers can bridge the gap between urban-based services and rural communities, thereby presenting a pathway to elevate financial literacy, empower rural farmers economically, and nurture inclusive financial practices that profoundly impact their livelihoods.

The geographical divide persists as a formidable challenge for smallholder farmers' access to formal financial services. According to UNCDF (2020), Zambia is home to over two million smallholder farmers and a rural population of approximately 9.7 million, with roughly 40% experiencing financial exclusion. These rural individuals lack adequate access to infrastructure and financial services, leading to limitations in their ability to pay for supplies, receive digital payments, or facilitate money transfers as needed, ultimately hampering farmers' productivity.

However, the rise of mobile money presents a promising solution to mitigate this challenge, offering an avenue to enhance financial inclusion and empower rural farmers in ways that were previously unattainable. As this trend continues to evolve, a concerted effort to align policies, infrastructure, and services with the potential of mobile money can significantly contribute to leveling the financial playing field for smallholder farmers and promoting sustainable economic growth within rural communities.

5.4.2. Access to credit

This study undertook a comprehensive analysis encompassing both the demand and supply sides of credit accessibility for smallholder farmers, considering a wide array of demographic and contextual factors. The empirical exploration of the demand side sought to discern the impact of three pivotal demographic variables—gender, age, and income on farmers' access to credit. However, the subsequent regression analysis indicated that these predictor variables did not yield statistically significant impacts on credit access. Despite this outcome, it's important to note that the p-values for

gender and income approached the significance level, implying the potential influence of these variables. This is in line with a study conducted by SCOPE insights (2021) on gender's effect on access to finance. The study revealed that globally, 36% of women working in agriculture have less access to finance than men. Legal or cultural barriers often prevent some women from obtaining loans, and even when they manage to secure a loan, it is often lower than the loans granted to men for small businesses.

A similar study conducted by Siwale (2018) found that more than half (55.2%) of the farmers who accessed finance were considered wealthy, compared to only 35% of those who did not access finance. This underscores the significance of wealth, which comprises a combination of assets owned, and income earned by a household, in determining the ease with which a household can access finance. Lenders typically extend finance to wealthier households as they perceive them to carry less risk when it comes to loan repayment. This underlines the importance of further exploration, potentially through an expanded sample size or the introduction of supplementary variables to gain deeper insights into the complexities of credit access determinants.

Shifting focus to the supply side, the study identified a spectrum of factors that intricately affect the creditworthiness of smallholder farmers. One key dimension is the inherent risk associated with lending to farmers operating on a smaller scale. The unpredictability of farming yields often misaligns with the cost of farming, posing challenges in managing repayment schedules. Moreover, the farmers' choice of crop, particularly a prevalent focus on maize farming, intersects with political control, creating a high-risk environment that inhibits microfinance institutions from extending services (AGRA, 2015).

Technical knowledge of smallholder farmers and their crop management practices emerged as another critical aspect. Limited expertise in optimal farming techniques can lead to decreased yield, affecting the capacity to generate adequate income and repay loans. The absence of collateral and inadequate record-keeping practices emerged as additional challenges, further dampening farmers' creditworthiness. Furthermore, complications surrounding land ownership largely devoid of proper land titles create barriers that impede access to financing opportunities. This is supported by studies by Chandio et al. (2017) as well as Lemessa and Gemchu (2016), who found that lack of collateral and poor record-keeping has a negative effect on farmers’ ability to access finance.

In light of these intricate dynamics on both the demand and supply sides, this study underscores the multifaceted nature of credit accessibility for smallholder farmers. The findings emphasize the need for tailored interventions and policy measures that address these challenges holistically. By

considering a comprehensive strategy that considers the nuanced factors impacting credit access, policymakers and stakeholders can effectively support the financial inclusion of smallholder farmers, fostering economic growth and sustainable livelihoods within the agricultural sector.

5.5. Alternative financing options for smallholder farmers

The findings of this research underscore a prevalent issue: rural smallholder farmers are, indeed, facing exclusion from accessing essential financial services (AGRA, 2020). This realization reinforces the critical need for alternative financing models that can cater to the unique circumstances and challenges faced by this marginalized demographic. Traditional financial services have proven inadequate in addressing the specific needs of smallholder farmers, prompting a call for innovative approaches that can bridge the gap and facilitate their financial inclusion (ILO, 2020).

In light of these conclusions, this study advocates for the exploration and adoption of diverse financing options that can effectively empower smallholder farmers. The proposed models hold the potential to revolutionize the financial landscape for these farmers, providing them with the means to access credit and enhance their economic prospects.

Mobile money lending emerges as a compelling solution that aligns with the digital age. By utilizing mobile phone networks to facilitate money transfers between borrowers and lenders, this model capitalizes on the widespread usage of mobile phones in rural areas. The convenience and accessibility of this approach position it as a viable option for rural farmers, potentially revolutionizing the way they access credit. The study that was done by Marcy Corps (2022) indicates that smallholder farmers mainly use their phones for communication, with few farmers receiving and making payments using their phones. Further, the study showed that six in ten smallholder farmer are financially excluded in Zambia, a narrative that needs to change.

Peer-to-peer lending, gaining momentum in Zambia, demonstrates the strength of community-based support. By enabling direct lending between individuals, bypassing traditional financial intermediaries, this model taps into local networks to provide credit to those unable to secure loans from conventional lenders. The rising popularity of this approach underscores its potential to cater to the unique financial needs of smallholder farmers. In line with this recommendation, Bank of Zambia (2018), stated that crowdfunding and peer-to-peer lending is a keystone of serving the capital-demand of Zambian SMEs.

Guarantee schemes offer a mechanism to mitigate risk, assuaging lenders' concerns about potential defaults. These programs provide a safety net, encouraging lenders to offer loans to high-risk

borrowers like rural farmers. This approach promotes inclusivity by creating an environment where lenders are more willing to extend credit to individuals who typically face barriers. This aligns very well with the Zambia Credit Guarantee Scheme (ZCGS) whose made is the provision of partial credit guarantees to enable viable and eligible Zambian Micro, Small and Medium Enterprises (MSMEs) with inadequate collateral, have increased access to affordable financing from lending financial institutions thereby promoting their growth and development

Collateral substitutes address a fundamental limitation often encountered by smallholder farmers, the lack of conventional collateral. By accepting alternative assets as security for loans, this model paves the way for those without tangible property to access credit, leveling the playing field and promoting financial inclusivity. Although a study by Qwabe (2014) on lending to small scale farmers in South Africa stated that there was little to no innovation with regards to collateral alternative especially when considering private sector formal institutions.

Group lending introduces a communal dimension into the financial ecosystem. Through collective responsibility, borrowers form groups and mutually guarantee each other's loans. This fosters accountability, reducing risk for lenders and providing support to rural farmers who may lack individual financial backing. In addition, the Republic of Zambian government said in 2022 that it intended farmers to work in small, well-organized groups known as Out Grower Schemes (OGS), where they could easily receive input provision and have their product gathered and aggregated in one location. They would be able to meet the necessary volumes with a guaranteed market thanks to this. Furthermore, Out Grower Schemes make technical services like extension services and buyers of agricultural products visible, both locally and internationally. This provides smallholder farmers with a ready market, as they typically have difficulties with production and selling (World Vision, 2022).

The implications drawn from this research highlight the urgent need for alternative financing models to address the financial exclusion faced by rural smallholder farmers. The suggested model namely; mobile money lending, peer-to-peer lending, guarantee schemes, collateral substitutes, and group lending offer avenues for improved financial access and empowerment. By embracing these innovative approaches, policymakers, financial institutions, and stakeholders can play a pivotal role in fostering sustainable economic growth and uplifting the livelihoods of smallholder farmers within Zambia.

5.6.Limitation of the Study

Based on the logistic regression results, none of the variables (gender, age, income) were found to have a statistically significant impact on the likelihood of borrowing money at the 0.05 significance level. However, it's important to note that the p-values for gender and income were relatively close to the significance level, suggesting the need for further investigation with a larger sample size or additional variables.

5.7. Significance of the study

This study has contributed to the existing body of scientific knowledge in agribusiness financing by addressing the research gap on key factors affecting SHFs accessing finance and provide alternative sources of finance other than tradition credit from banks.

The insights garnered from the analysis of smallholder farmers' financial access, factors influencing their access to finance, and alternative financing models serve as the foundation for scholars and other stakeholders make informed decisions. The proposed measures are intended to bridge the gap between theory and practice, this research contributes to the discourse on fostering financial inclusion and sustainability within Zambia's vital agricultural sector.

5.8.Evidence-Based Recommendations

5.8.1. Strengthening technological infrastructure

To leverage the increasing adoption of mobile money services among smallholder farmers, policymakers and relevant stakeholders should prioritize the development and enhancement of technological infrastructure in rural areas. This involves expanding mobile network coverage, ensuring reliable connectivity, and investing in digital literacy programs to empower farmers to effectively use mobile financial services.

5.8.2. Tailored financial education programs

Recognizing the significance of financial literacy, there is a pressing need to design and implement targeted financial education programs for smallholder farmers. These programs should focus on enhancing farmers' understanding of financial concepts, mobile money usage, and prudent financial management practices. Engaging with local communities and agricultural extension services can facilitate the dissemination of such education.

5.8.3. Encouraging diversification of agricultural activities

To mitigate the risk associated with lending to farmers focused on a single crop, stakeholders should promote the diversification of agricultural activities. Providing incentives and support for farmers to explore diverse crops and value chains can reduce vulnerability and enhance creditworthiness, thereby encouraging microfinance institutions to extend their services.

5.9.Policy Recommendations

5.9.1. Rural infrastructure development

Government initiatives should focus on improving rural infrastructure, including road networks and transportation systems. Enhancing physical connectivity can reduce the geographical barriers that hinder access to financial services, allowing smallholder farmers to easily engage with formal banking and other financial options.

5.9.2. Regulatory framework for mobile money lending

Regulatory bodies should collaborate with financial institutions to develop a regulatory framework that supports and governs mobile money lending. This framework should address issues related to risk management, consumer protection, interest rates, and data security, while also fostering innovation and competition in the mobile money sector.

5.9.3. Strengthening community-based financing

Promoting peer-to-peer lending and guarantee schemes can be achieved through partnerships between microfinance institutions and local community organizations. The government can incentivize such partnerships by offering tax breaks or grants to institutions that actively participate in community-based financing initiatives.

5.9.4 Implications for Stakeholders and Development Organizations

5.9.4.1 Collaboration for impactful interventions

Stakeholders, including government agencies, financial institutions, non-governmental organizations, and international development organizations, should collaborate to develop integrated interventions that address the multidimensional challenges of financial inclusion. This can involve

joint research, funding, and implementation of programs aimed at enhancing the financial prospects of smallholder farmers.

5.9.4.2 Research and data-driven decision making

Development organizations and research institutions should continue to invest in comprehensive studies to deepen the understanding of financial access barriers and opportunities in rural contexts. By relying on data-driven insights, decision-makers can design and implement more effective interventions that align with the unique needs of smallholder farmers.

5.10 Future Research Directions

5.10.1 Longitudinal studies on impact

Future research should focus on conducting longitudinal studies to assess the long-term impact of the recommended interventions. This will enable researchers and policymakers to measure the effectiveness of the implemented measures and make necessary adjustments to further enhance financial inclusion outcomes.

5.10.2 Exploring blockchain technology

Given the potential of blockchain technology to streamline transactions and enhance transparency, future research could explore its applicability in improving financial access for smallholder farmers. Investigating the feasibility of using blockchain-based systems for secure landownership records and loan transactions could yield transformative results.

5.11 Conclusion

This research aimed to study the effects of factors that affect agribusiness financing in Zambia and provide alternative financing models to address the financial exclusion faced by rural smallholder farmers. The findings revealed that only 19% of the SHFs surveyed accessed credit and only 8% of rural SHFs were utilizing formal banking services. . The study delved into credit access challenges, both on the demand and supply sides, and identified variables such as gender, age, and income that impacted credit availability. Logistic regression analysis further explored the influence of these variables on credit access. In response to these challenges, the research proposed innovative financing models tailored to the unique needs of SHFs. These models include mobile money lending, peer-to-peer lending, guarantee schemes, collateral substitutes, and group lending. Each model offers an

avenue to empower farmers economically and overcome barriers to financial access.

The study recommended that the Government initiatives should focus on improving rural infrastructure, including road networks and transportation systems. Further, incentivize institutions or partnerships that actively participate in community-based financing initiatives by offering tax breaks or grants to them. Lastly, regulatory bodies should collaborate with financial institutions to develop a regulatory framework that supports and governs mobile money lending to ensure consumer protection and fair competition.

REFERENCES

Baloyi JK 2010. *An Analysis of Constraints Facing Smallholder Farmers in the Agribusiness Value Chain: A Case of Farmers in Limpopo Province.* Masters Thesis, Unpublished. University of Pretoria, Pretoria.

Besley, Timothy and Stephen Coate (1995), "G*roup Lending, Repayment Incentives and Social Collateral*", Journal of Development Economics, vol. 46, 1, 1-18.

Bidzakin KJ 2009. *Assessing Performance of Micro and Small Scale Agribusiness in Northern Ghana: Non-Financial and Stochastic Frontier Analysis.* Masters Thesis, Unpublished. College of Agriculture and Natural Resources, Ghana.

Busetto, L., Wick, W. & Gumbinger, C. *How to use and assess qualitative research methods*. *Neurol. Res. Pract.* **2**, 14 (2020). https://doi.org/10.1186/s42466-020-00059-z

Central Statistical Office (Zambia). (2012). Zambia 2010 census of population and housing. National analytical report (Report No. HA4703 .A4 2010N). Central Statistical Office.

Chandio, A. A., Jiang, Y., Wei, F., Rehman, A., & Liu, D. (2017). *Famers' access to credit: Does collateral matter or cash flow matter*?—Evidence from Sindh, Pakistan. Cogent Economics & Finance, 5(1), 1369383.

Churchill NC, Lewis VL 1983. The five stages of small business growth. *Harvard Business Review, 61:30-50*

Clover TA, Darroch MAG 2005. *Owners Perceptions of Factors that Constrain the Survival and Growth of Small, Medium and Micro Agribusinesses in KwaZulu-Natal, South Africa*. Masters Thesis, Unpublished

Chipungu, S. (1988). The State, Technology and Peasant Differentiation in Zambia: A case Study of Southern Province. Lusaka: Historical Association Of Zambia

Chizuni, J.M. (1994). *Food Policies and Food Security in Zambia*. Nordic Journal of African Studies 3.1: 46-51 Creswell, J.W (2008). *Understanding Research. Michigan*: University of Michigan

Dodge, Doris Jansen.(1977). Agriculture Policy and Performance in Zambia. History,

Dorward, A., Kydd, J., Morrison, J., & Urey, I. (2004). *A policy agenda for pro-poor agricultural growth*. World development, 32(1), 73-89.

EOSOC, 2016. Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators, s.l.: ECOSOC.

Fatoki OO, Garwe D 2010. Obstacles to the growth of new SMEs in South Africa: A principal component analysis approach. *African Journal of Business Management*, 4: 729-738.

Hall G 1995. *Surviving and Prospering in the Small Firm Sector*. London: Routledge.

Kuratko DF, Hodgetts RM 1995. *Entrepreneurship: A Contemporary Approach*. Orlando: The Dryden Press.

Ghosh, P., Mookherjee, D., & Ray, D. (2000). *Credit rationing in developing countries*: an overview of the theory. Readings in the theory of economic development, 383-401.

Gloy, B. A., Gunderson, M. A., & LaDue, E. L. (2005). *The costs and returns of agricultural credit delivery*. American journal of agricultural economics, 87(3), 703-716.

Green, E., & Norberg, M. (2018). *Traditional Landholding Certificates in Zambia*: Preventing

or Reinforcing Commodification and Inequality?, Journal of Southern African Studies, 44:4, 613-628, DOI: 10.1080/03057070.2018.1461490

Govereh,J., T.S. Jayne, and A.Chapoto. 2008. *Assessment of Alternative Maize Trade and Market Policy Interventions in Zambia*. FSRP Working Paper No. 33. Lusaka, Zambia: Food Research Project

Government of Republic of Zambia, (2004*). Financial Sector Development Plan*. Lusaka: GRZ

Green, E., & Norberg, M. (2018). *Traditional Landholding Certificates in Zambia: Preventing or Reinforcing Commodification and Inequality?*, Journal of Southern African Studies, 44:4, 613-628, DOI: 10.1080/03057070.2018.1461490

Greiner LE 1972. Evolution and revolution as organisations grow. *Harvard Business Review*, 50: 37-47.

Guzman J 2004. Towards a taxonomy of entrepreneurial theories. *International Small Business*, 12: 77-88.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate data analyses with readings*. Englewood Cliffs, New Jersey.CSO, 2019. *Annual Report ,* Lusaka: Government Printer.

Howard, J.A., and Mungoma C. 1(996*). Zambia's Stop-and-go Revolution*: The Impact of Policies and Organizations on the Development and Spread of Maize Technology in MSU

Hulme, David, and Paul Mosley.1996. *Finance Against Poverty*. Routledge, London.

Jayne T.S, B. Zulu, B. Kajoba et al (2008).Access to Land and Poverty Reduction in Rural *Zambia*: Connecting the policy issues. Food Security Research Project Working Paper No. 34. Lusaka, Zambia: FSRP.

Jere G. M, Aderele B. A & Jere A. (2014). *Exploring Factors that Influence Store Patronage amongst Low-Income Consumers in Cape Town*, South Africa in Mediterranean Journal of Social

Sciences MCSER Publishing, Rome-Italy vol. 5, no. 20

Jessop, R., Diallo, B., Duursma, M., Mallek, A., Harms, J., & van Manen, B. (2012). Creating access to agricultural finance based on a horizontal study of Cambodia, Mali, Senegal, Tanzania, Thailand and Tunisia. *Paris, AFD, A savoir*.

Juguna, E., & Nyairo, N. (2010). Formal Conditions That Affect Agricultural Credit Supply To Small-Scale Farmers In Rural Kenya: case study for Kiambu County

Kalapula, S.C. (2007). The Social Economic Impact of East Cost Fever. Lusaka: Department

Kalamata. (2009). *Performance assessment of extension services under contract farming arrangement: A case study of flue-cured Tobacco Growers in Urambo district.* Morogoro, Tanzania: Sokoine University of Agriculture.

Karli, A. B. (2009). Factors Affecting Farmers' Decision to Enter Agricultural Cooperatives Using Random Utility Model in the South Eastern Anatolian Region of Turkey. *Journal of Agricultural and Rural Development in the Tropics and subtropics*, volume 107, No.2, PP 115-127.

Kelly & Pemberton. (2016). An assessment of the Household food security status and local foods Grown in Rural Bahamas. *The journal of the Caribbean Agro-Economic Society*, 8(1).

Kirsten, J. &. (2002). Linking Agribusiness and Small-scale Farmers in Developing Countries: Is There a New Role for Contract Farming? *Development Southern Africa*, , Vol. 19, No. 4. 503-529.

Korie, G.K. (2015). Factors Affecting Access to credit by Small Business producer Groups in Trans-Nzoia County. University of Nairobi.

Kothari, C.R. (2003). *Research Methodology:* Methods and Techniques (2nd Edition). New Age International (P) Ltd Publishers, New Delhi.

Kothari and Garg. (2014). *Research methodology Methods and Techniques.* . 3rd ed. New Delhi:: New Age International (P) Ltd., p.63.

Labaree, R. (2009). *Research Guides*: Organizing Your Social Sciences Research Paper: Types of Research Designs.

Lawrence, M. K. (2010). *Cooperatives*: The sleeping Economic and Social giants in Uganda. Coop Africa Working Paper . No.5. ILO.

Meyer, R. L. (2011). Subsidies as an instrument in agriculture finance: A review.

Meyer, R. L. (2015). Financing agriculture and rural areas in sub-Saharan Africa: Progress, challenges and the way forward. IIED, ISBN, 978-1.

McGaghie et al. (2015, January 5). *Problem statement, conceptual framework and research question.*

Retrieved from http://goo.gl/qLIUFg.

Mugenda and Mugenda. (2012). *Research Methods: Qualitative Approaches.* Nairobi: Africa center for technology studies.

Mwamakimbula. (2014). *Assessment of the factors impacting agricultural extension training programs in Tanzania:a descriptive study.* Tanzania: Iowa State University.

Mbonyane BL 2006. *An Exploration of Factors that Lead to Failure of Small Businesses in the Kagiso Township.* College of Economics and Management, UNISA, South Africa.

Mccartan-Quin D, Carson D 2003. Issues which impact upon marketing in the small firms. *Small Business Economics,*21: 102-177.

Mohn, P., 2007. Zambia : The Enterprise Development Project. Africa Region Findings & Good Practice. *World Bank,* 1(1).

Njuguna, E., & Nyairo, N. (2010). Formal Conditions That Affect Agricultural Credit Supply To Small-Scale Farmers In Rural Kenya: case study for Kiambu County

Nugussie, Z. (2009). *Why Some Rural People Become Members of Agricultural Cooperatives while Others do not.* Ethiopia.: Mekelle University.

Obwona. (2013). *Determinants of technical efficiency differentials amongst small and medium-scale farmers in Uganda: A case of tobacco growers:AERC Research paper 152.* Nairobi: AFrican Economic Research Consortium.

Olomola I.O. (1999*): Reading in agricultural financing small scale farmers in Nigeria*. NISER publication.

Orodho. (2009). *Techniques of writing research proposals and techniques.* Nairobi: Harlifax printers.

Peng, C. Y. J., & So, T. S. H. (2002). Logistic regression analysis and reporting: A primer. *Understanding Statistics: Statistical Issues in Psychology, Education, and the Social Sciences*, *1*(1), 31-70.

Pasanen M 2006. *SME Growth Strategies: A Comparison of Young and Long-lived Firms.* PhD Thesis, Unpublished. University of Kuopio, Kuopio.

University of Kwazulu Natal, Kwazulu Natal. Dodge HR, Robbins JE 1992. An empirical investigation of the organisational life cycle model for small business development and survival. *Small Business Management,* 30: 27-38.

Samboko, p., Sambo, J. & Luhana, J., 2008. Agriculture Finance in Zambia: How can Smallholder Inclusion be Deepened. *Working Paper No. 142,* p. 56.

Sebatta, C., Wamulume, M. & Mwansakilwa, C., 2014. Determinants of smallholder farmers' access to agricultural finance in Zambia. *Journal of Agricutural Science,* 6(11).

Siwale, M., 2019. Factors affecting access to finance by Smallholder Farmers in Zambia. Cape Town: University of Cape Town.

SPRS, 2014. International Finance Corp.'AAA/A-1+' Rating Affirmed; Outlook Remains Stable, New York: McCRAW Hill Financial .

Susanne, N. et al., 2011. *Agricultural development in a changing climate*, s.l.: German Development Institute.

Stokes D, Wilson N 2006. *Small Business Management and Entrepreneurship*. South-Western Cengage Learning: DP Publications Ltd.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Allyn & Bacon/Pearson Education.

Timmons J 1999. *New Venture Creation: Entrepreneurship for the 21st Century*. Boston: Irwin/McGraw-Hill.

Wachira, M. I., & Kihiu, E. N. (2012). Impact of financial literacy on access to financial services in Kenya. *International Journal of Business and Social Science*, *3*(19).

Wenner, M. D. (2010). *Credit risk management in financing agriculture* (No. 18 (10)). International Food Policy Research Institute (IFPRI).

Wichern, R., Hausner, U., & Chiwele, D. K. (1999). *Impediments to agricultural growth in Zambia* (No. 47). International Food Policy Research Institute (IFPRI).

Zambia Statistics Agency. (2023). 2022 Census of Population and Housing Preliminary Report. Zambia Statistics Agency. https://www.zamstats.gov.zm/wp-content/uploads/2023/05/2022-Census-of-Population-and-Housing-Preliminary.pdf

Zambia Statistics Agency. (2023). Highlights of the 2022 Poverty Assessment in Zambia. Zambia Statistics Agency. https://www.zamstats.gov.zm/wp-content/uploads/2023/09/Highlights-of-the-2022-Poverty-Assessment-in-Zambia-2023.pdf