
BUSITEMA UNIVERSITY ARAPAI CAMPUS

**FACULTY OF AGRICULTURE AND ANIMAL SCIENCES DEPARTMENT OF
AGRIBUSINESS AND EXTENSION.**

**DRIVERS OF GROUNDNUTS FARMERS HOUSEHOLD MARKET PARTICIPATION
DECISIONS IN KATETA SUB-COUNTY, SERERE DISTRICT.**

BY

OKWOTO SOLOMON

REG NO. BU/UP/2023/3613

CONTACT: 0762352052

Email: okwotosolomon292@gmail.com

SUPERVISOR: MS. IRENE LYNETTE AKIDI

**A SPECIAL PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF
AGRIBUSINESS AND EXTENSION IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF A BACHELORS DEGREE OF
AGRIBUSINESS OF BUSITEMA UNIVERSITY.**

SEPTEMBER 2026

DECLARATION.

I OKWOTO SOLOMON declare that this study is my original work and has not been submitted to any institution before.

Signature:..... Date: 28th/09/2026.....

OKWOTO SOLOMON

APPROVAL.

This report has been submitted to the department of agribusiness and extension with the approval of the supervisor.

Signature: *Irene Lynette Akidi* Date: 20th / 09 / 2026

MS. IRENE LYNETTE AKIDI

DEDICATION

I Okwoto Solomon hereby dedicate this work to my family especially my parents, whose unwavering support and encouragement have been the foundation of my academic journey. Special appreciation goes to the farmers whose resilience and hard work inspired this study, to my supervisor for the guidance throughout the study. May this research contribute to improving their livelihood and market opportunities.

ACKNOWLEDGEMENTS.

I wish to express my appreciation to my supervisor for the guidance, patience and feedback throughout this study. My appreciation also goes to Busitema university for providing academic environment and resources necessary for this research. I am indebted to the groundnut farmers who participated in the study, generously sharing their time and experiences. Lastly, heartfelt thanks to my colleagues and friends for their moral support and encouragement.

TABLE OF CONTENTS.

DECLARATION.....	ii
APPROVAL.	iii
DEDICATION.....	iv
ACKNOWLEDGEMENTS.	v
LIST OF FIGURES.	x
LIST OF ACRONYMS.	xi
ABSTRACT.....	xii
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the study	1
1.2 STATEMENT OF THE PROBLEM.	3
1.3 OBJECTIVES OF THE STUDY.....	4
1.3.1 General Objective	4
1.3.2 Specific Objectives:	4
1.4 RESEARCH QUESTIONS.....	4
1.5 Hypotheses.....	5
1.6 Significance of the study.....	5
1.7 Justification of the study.	5

1.8 Scope of the study.....	6
1.9 Limitations of the study.....	7
CHAPTER TWO: LITERATURE REVIEW.....	7
2.0 Introduction to the Literature Review:.....	7
2.1 Conceptual Review.....	8
2.1.1 Household Market Participation.....	8
2.3 Empirical Literature Review of the Study.....	12
2.3.1 Empirical Literature on the Socio-economic and Demographic Characteristics of Smallholder Groundnut Farmers According to Market Participation.	12
2.4 Research Gaps.....	16
CHAPTER THREE: METHODOLOGY.	17
3.1 Study Area.	17
3.2 Research Design.	17
3.3 Target Population.	18
3.4 Sample size determination:	18
3.5 Sampling Procedure.....	18
3.6 Data Collection.....	18
3.7 Data Collection Methods.	19
3.7.1 Questionnaire Survey.	19
3.7.2 Observation.	19

3.8 Data Collection Instruments.	19
3.9 Measurement of Variables.	19
3.10 Validity and Reliability of Research Instruments.	20
3.11 Data analysis.	20
3.12 Ethical Considerations.	20
3.13 Expected Outcomes.	20
3.14 Conceptual framework.	21
CHAPTER FOUR: PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS..	24
4.0 Introduction.	24
4.1 Objective one: To characterize small holder groundnut farmers	24
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS.	36
5.1 Summary of the Findings.	36
5.2 Conclusion.	36
5.3 Recommendation.	36
5.4 Areas for further research.	37
APPENDICES	41
Appendix 1: Questionnaire	41

LIST OF TABLES.

Table 1.	Table 1: Socio-Demographic Characteristics of the Respondents.....	24
Table 2	Table 2: Farm and Household Characteristics (continuous variables) Error! Bookmark not defined.	
Table 3	Table 3: Factors that influence household participation in groundnut marketing (binary logistic regression model).	28
Table 4	Table 4: The challenges faced in making marketing decisions among smallholder household groundnut farmers.	32

LIST OF FIGURES.

Figure 1Figure1: conceptual framework of the study	22
Figure 2: Figure 0 1: study area map	47

LIST OF ACRONYMS.

ACCA	Association of Chartered Certified Accountants
APID	Ateker Professionals Initiative for Development
BUAC	Busitema University, Arapai Campus
CAA	Civil Aviation Authority
DCP	Diploma in Crop Production and Management
EAC	East African Community
FAO	Food and Agriculture Organization of the United Nations
NEMA	National Environmental Management Authority
NEPAD	New Partnership for Africa's Development
NRM	Natural Resources Management
UNEB	Uganda National Examination Board
NARO	National Agricultural Research Organization
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
UBOS	Uganda Bureau of Statistics
IFAD	International Fund for Agricultural Development

ABSTRACT.

This study examined the drivers of groundnut farmers' intra-household market participation decisions in Kateta Sub-county, Serere District, Uganda. Specifically, the study sought to: characterize smallholder groundnut farmers according to their market participation status; determine the socio-economic factors influencing intra-household market participation decisions; and identify the major challenges affecting market participation among smallholder groundnut farmers. A cross-sectional research design employing both quantitative and qualitative approaches was adopted. Primary data were collected from 150 randomly selected smallholder groundnut farmers using structured questionnaires. Data were analysed using descriptive statistics, independent sample *t*-tests, chi-square tests, and binary logistic regression. The findings revealed significant differences between market participants and non-market participants in terms of age ($p = 0.017$), household size ($p = 0.049$), quantity harvested ($p = 0.003$), years of growing groundnuts ($p = 0.006$), land size ($p = 0.036$), quantity sold ($p = 0.001$), and selling price ($p = 0.012$). Education level ($\chi^2 = 2.25$, $p = 0.028$) and main occupation ($\chi^2 = 6.20$, $p = 0.013$) were significantly associated with market participation, while gender and marital status showed no significant association. Binary logistic regression analysis further indicated that age ($B = -0.041$, $p = 0.031$) and household size ($B = -0.118$, $P = 0.023$) significantly influenced household market participation decisions, while gender, marital status, education level, main occupation, fertilizer application, access to credit, extension services and agricultural training were not strategically significant predictors in the fitted model.

The study also identified several constraints affecting market participation, including low prices, inadequate access to reliable markets, poor road infrastructure, high transport costs, limited access to market information, inadequate capital and weak institutional support. These constraints reduced farmers' ability to commercialize groundnut production and limited household income.

CHAPTER ONE: INTRODUCTION.

1.1 Background of the study

Agriculture remained the backbone of Uganda's economy, employing approximately 70% of the country's labor force and contributing to household income, food security and rural livelihood (Uganda bureau of statistics (UBOS 2022)). The agricultural sector continued to support the livelihood of millions of smallholder farmers who depended on crop and animal livestock production as their primary source of income. In rural areas, agriculture also served as a major source of employment and played a good role in poverty reduction, food availability and economic development (World Bank,2022). Despite its importance, the continued to face challenges including low productivity, climate variability, poor market access, inadequate infrastructure and limited access to agricultural technologies, all of which affected the commercialization of agricultural enterprises (FAO,2021)

Globally, groundnuts (*Arachis hypogea L*) was recognized as one of the most important leguminous crops because of its nutritional, economic and industrial value. The crop served as an important source of edible oil, proteins, vitamins and minerals for human consumption, while its residues were utilized as livestock feed. In addition, groundnuts contributed to soil fertility through biological nitrogen fixation, thereby improving soil productivity and supporting sustainable agricultural production (FAO,2021). The crop was cultivated extensively across Asia, Africa and Latin America, where it contributed substantially to household food security, employment and income diversification among stallholder farming households (Okello et al, 2010).

In Sub-Saharan Africa, groundnut production constituted an important component of smallholder farming systems due to its adaptability to semi-arid conditions and relatively low production costs. Many farming households relied on groundnut production as both food and cash crop because it generates income while improving household nutrition. However, despite increasing production in many African countries, the commercialization of groundnuts remained relatively low because many farmers faced constraints related to poor market access, inadequate storage facilities, limited access to credit, and weak extension services (Barrett, 2008). These constraints reduced farmers incentives to participate in agricultural markets.

In Uganda, groundnuts remained one of the major food and cash crop cultivated predominantly by small-holder farmers, particularly in Eastern and Northern regions. Districts such as Serere, Kumi, Bukedea, Soroti, Katakwi accounted for a substantial proportion of national groundnut production because of favourable climatic conditions and fertile soils (Okello et al, 2010). The crop contributed significantly to household food security, employment and poverty reduction among rural farming communities (FAO, 2021). Groundnuts also served as an important source of raw materials for agro-processing industries involved in production of cooking oil, peanut butter, livestock feeds and confectionery products. Consequently, the government and several development partners promoted groundnut production through improved seed distribution, farmer training and extension services aimed at enhancing productivity and commercialization (Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), 2021).

Despite this intervention, market participation among smallholder groundnut farmers remained low. Many farmers produced primarily for household consumption and sold only surplus produce after satisfying family food requirements. The decision regarding whether, when, how much and to whom to sell groundnuts was influenced by several socio-economic, institutional and market related factors, including household income, education, farm size, access to market information, availability of transport, extension services, access to credit and favourable market prices (Barrett, 2008; Fischer & Qaim, 2012). These factors influenced not only farmers ability to access markets but also their level of commercialization and income generation.

Recent agricultural development literature increasingly recognized that households did not function as a single decision-making unit. Instead, production and marketing decisions were often negotiated among different household members whose interests, bargaining power and control over productive resources considered (Quisumbing & Maluccio, 2003). These gave rise to the concept of household decision making, which emphasized the importance of understanding how gender relations, ownership of assets, Labor allocation and access to resources influenced agricultural production and marketing decisions. In many rural households, men and women controlled different resources and had different priorities regarding allocation of agricultural income, investment decisions and market participation (Dos, 2013).

In Uganda, women contributed to agricultural production accounting for a large proportion of the Labor involved in planting, weeding, harvesting, processing and post-harvest handling of crops, including groundnuts. However, despite their significant contribution, women possessed limited control over productive resources such as land, agricultural inputs, financial capital and marketing decisions. Cultural norms and gender roles frequently assigned ownership and control of agricultural income to male household heads, thereby limiting women's participation in marketing decisions and reducing their bargaining power within households (World Bank, 2014; Njuki et al., 2011). Such inequalities affected household welfare because women's participation in agricultural markets had been associated with improved household nutrition, children's education and overall family well-being.

Kateta sub-county in Serre district represented one of the major groundnut producing areas in eastern Uganda where agriculture remained major economic activity. Most households depend on groundnut production for both food and income generation. Nevertheless, considerable variation existed in the extent to which farming households participated in groundnut markets while some households actively marketed a substantial proportion of their produce, others sold only small quantity or did not participate in marketing at all. Furthermore, marketing decisions within households were often influenced by gender relations, access to productive resources, household bargaining power, institutional support and marketing conditions. These household dynamics determined who participated in marketing activities, who controlled income from the sale of groundnuts and how the benefits generated from agricultural commercialization were distributed among household members (Dos, 2013; Beegle et al., 2018).

1.2 STATEMENT OF THE PROBLEM.

Agricultural market participation is important for improving smallholder farmers' income, livelihoods and household welfare (Dlamini & Huang, 2019; Ebata & Hernandez, 2017). However, many smallholder farmers in Sub-Saharan Africa still face difficulties in participating effectively in agricultural markets due to poor roads, limited market information, inadequate transport and weak institutional support (Chagwiza et al., 2020; Jari & Fraser, 2009).

In Uganda, these challenges increase transaction costs and limit farmers' access to profitable markets. Factors such as farmer-group membership, extension services, market distance, road

conditions and access to inputs can influence farmers' marketing decisions (Dorward et al., 2003; Gramzow et al., 2018). Household characteristics such as household size and labour availability can also affect the ability of farmers to produce enough surplus for sale (Arora & Rada, 2017).

Although several studies have examined agricultural market participation, few have focused on **intra-household marketing decisions and their institutional and technical drivers** (Barrett, 2008; Me-Nsope & Larkins, 2016). Therefore, there is a need to examine the factors influencing intra-household marketing decisions among smallholder farmers in Northern Uganda in order to identify the major constraints and provide information for improving market participation and household welfare (Lukwago, Okello, & Mugonola, 2025).

1.3 OBJECTIVES OF THE STUDY.

1.3.1 General Objective

To examine the factors influencing household market participation decisions among smallholder's farmers in Kateta Sub-County, Serere district.

1.3.2 Specific Objectives:

1. To characterize smallholder's groundnut farmers in Kateta sub-county, Serere district.
2. To determine the factors that influence household participation in groundnut marketing
3. To identify the challenges faced in making marketing decisions among smallholder household groundnut farmers.

1.4 RESEARCH QUESTIONS.

1. What are the socio-economic characteristics of groundnut farming households in Kateta Sub-County?
2. Which factors influence household participation in groundnut marketing?
3. what are the challenges faced in making marketing decisions among smallholder household groundnut farmers.

1.5 Hypotheses.

The study hypothesized that socio-economic, demographic, institutional, and market related factors significantly influenced intra-household market participation decisions among smallholder groundnut farmers in Kateta sub-county, Serere district. Specifically, it was hypothesized that farmer's age, gender, education level, household size, farming experience, access to credit, access to extension services, access to market information, farm size, distance to the market and access to transportation significantly affected the likelihood and level of intra-household market participation in groundnut marketing. The null hypothesis (H0) stated that there was no significant relationship between these factors and intra-household market participation decisions among groundnut farmers, while the alternative hypothesis (H1) stated that there was a significant relationship between the identified factors and household market participation decisions.

1.6 Significance of the study.

The findings of this study will provide valuable information to policymakers, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), district local governments, extension service providers, and development partners on the factors influencing intra-household market participation decisions among smallholder groundnut farmers. The findings will support the formulation and implementation of policies and programs aimed at enhancing agricultural commercialization, improving market access, and increasing household incomes. Extension workers will use the findings to design appropriate farmer training programs and advisory services that strengthen farmers' marketing knowledge, production efficiency, and decision-making capacity.

1.7 Justification of the study.

Groundnut production was an important source of food, nutrition, and household income for many rural households in Uganda, particularly in the Eastern Region. Despite its economic importance, many smallholder groundnut farmers continued to experience low levels of market participation due to socio-economic, institutional, and market-related constraints that limited agricultural commercialization and household income (MAAIF, 2020; UBOS,2021). Previous studies had largely focused on general agricultural market participation while giving limited attention to the intra-household processes that influenced marketing decisions, particularly among groundnut

farmers in Serere District. Consequently, there was inadequate empirical evidence on the drivers of intra-household market participation decisions in Kateta Sub-county (Quisumbing et al., 2014; Njuki et al., 2011). Therefore, this study was undertaken to bridge this knowledge gap by generating location-specific empirical evidence on the socio-economic, institutional, and market-related factors influencing intra-household market participation decisions among smallholder groundnut farmers. The findings were intended to inform policymakers, extension service providers, development partners, and other stakeholders in designing interventions that promote agricultural commercialization, improve market participation, and enhance the livelihoods of rural farming households (Doss, 2013; Meinzen-Dick et al., 2014).

1.8 Scope of the study.

Geographical Scope. The study was conducted in Kateta Sub-County, Serere District, Eastern Uganda. The area was selected because it is one of the major groundnut-producing areas in the Teso Sub-region where a large proportion of households depended on groundnut production for food security and income generation. The study focused on selected villages within Kateta Sub-County where groundnut farming constituted a major agricultural enterprise.

Content Scope. The study focused on the drivers of groundnut farmers' household market participation decisions. Specifically, the study examined the socio-economic characteristics of groundnut farming households, determined the socio-economic, institutional, market-related, and gender factors influencing household market participation decisions, and identified the challenges affecting household participation in groundnut marketing. Variables considered included age, gender, education level, household size, farm size, farming experience, access to extension services, access to credit, farmer group membership, market information, distance to markets, road accessibility, and household decision-making processes.

Population Scope. The study focused on smallholder groundnut farming households in Kateta Sub-County, Serere District. Both male and female adult household members involved in groundnut production and marketing decisions were included. In addition, key informants comprising agricultural extension officers, local council leaders, farmer group leaders, and community development officers participated in the study because they possessed relevant knowledge regarding agricultural production and marketing within the study area.

Time Scope. The study covered the 2025/2026 agricultural production season, during which information relating to groundnut production, household decision-making, and market participation was collected and analyzed. The research activities, including proposal development, data collection, data analysis, report writing, and dissemination of findings, were conducted during the 2025/2026 academic year.

1.9 Limitations of the study.

Data accuracy. Some farmers could not remember exact figures regarding their incomes, farm expenses leading to recall bias.

Language and communication. although I used local language, technical agricultural and marketing terms were misinterpreted.

CHAPTER TWO: LITERATURE REVIEW.

2.0 Introduction to the Literature Review:

This chapter reviews existing literature relevant to the study on the drivers of groundnut farmers' household market participation decisions in Kateta Sub-County, Serere District. The review provides a theoretical and empirical foundation for understanding the socio-economic,

demographic, institutional, and market-related factors that influence household decision-making regarding groundnut marketing (Barrett, 2008). It also examines the concept of household market participation and highlights the roles of household characteristics, access to productive resources, market incentives and institutional support in shaping farmers participation in agricultural markets (Omiti et al., 2009; Boughton et al., 2007). The literature review further identifies the major constraints affecting market participation among smallholder farmers and discusses the theoretical perspectives underpinning the study. Finally, the chapter synthesizes empirical evidence according to the study objectives and identifies existing knowledge gaps that justified the study. This review therefore provides a basis for interpreting the study findings and situating them within the broader body of knowledge on agricultural commercialization, household decision making and groundnut marketing (Barrett, 2008; Jambo et al., 2023).

2.1 Conceptual Review

2.1.1 Household Market Participation

Household market participation refers to the process through which members of the same household jointly make decisions regarding whether, when, how much and to whom agricultural produce should be sold. These decisions involve the allocation of agricultural produce, seed reservation and commercial sale while considering the interest and the bargaining power of different household members. Unlike general market participation, household market participation emphasizes the interactions and decision-making process among household members before produce reaches the market. The concept recognizes that households are not homogeneous units but consist of individuals with different preferences, responsibilities, and access to resources, which influence production and marketing decisions (Singh et al., 1986; Barrett, 2008).

In smallholder farming systems, household market participation is influenced by demographic characteristics, access to production resources, market incentives and institutional support. Decisions regarding the quantity of groundnuts to sell often depends on household food requirements, expected market price, availability of buyers and household financial needs (Omiti et al., 2009; Boughton et al., 2007). Effectively household decision making can improve household income and welfare by ensuring that agricultural production is appropriately allocated between household consumption and market sales (Barrett, 2008).

Market participation is considered as an important pathway through which smallholder farmers transition from subsistence farming to commercial agriculture. Increased participation enables farmers to generate income, access markets, invest in production and improve household livelihoods (Boughton et al., 2007; Gebremedhin & Jaleta, 2012). However, participation may be constrained by transaction costs, poor infrastructure, limited market information, inadequate access to credit and unequal access to production resources (Barrett, 2008; Mango et al., 2018).

2.1.2 Smallholder Groundnut Farming

Smallholder groundnut farming refers to the cultivation of groundnuts on relatively small landholdings using family Labor and limited external inputs. Smallholder farmers generally operate under resource constraints characterized by limited access to improved seeds, fertilizers, credit and extension services. Despite these limitations, groundnuts remain an important food and cash crop because it provides proteins, nutrition, income and agricultural productivity (FAO, 2023; Alene et al., 2008)

In Uganda, groundnuts are widely cultivated in the Eastern and northern regions due to favourable conditions. The crop contributes to household food security because it provides proteins, edible oil and income through local markets. Smallholder farmers depend on groundnut production for household consumption while selling part of their harvest to meet educational expenses, health care costs and financial obligations (FAO, 2023; Barrett, 2008)

2.1.3 Market Participation Decision

These refers to the choice made by household farmers regarding whether to sell produce in the market and the extent of participation. The decision includes determining the quantity to sell, time of sale, marketing channels. Market participation decisions are influenced by both internal household characteristics and external market conditions (Barrett, 2008; Omiti et al., 2009).

Several socio-economic characteristics influence participation decisions, including age, education level, farming experience, household size, land ownership, main occupation. Younger farmers may be more willing to respond to market opportunities while education can improve farmers ability to obtain market information, understanding the prices, negotiate with buyers and make decisions

(Mango et al; Konja & Mabe, 2023). Household size can influence market participation through both Labor availability and household consumption requirements (Omiti et al., 2009).

Institutional factors such as access to extension services, agricultural training, market information access and credit access also determine farmers willingness and ability to participate in agricultural markets. Extension services and training can improve farmers knowledge while credit can facilitate access to productive inputs and finance marketing activities (Jambo et al., 2023; Konja & Mabe, 2023).

Farmers compare the expected benefits of selling produce against transaction costs such as transport costs, price uncertainty and market risks before deciding to participate in markets. Householders with better access to information, infrastructure, productive resources and reliable market are more likely to participate in commercial agriculture (Barrett, 2008; Mango et al., 2018)

2.1.4 Drivers of groundnut farmers household Market Participation

Drivers of household market participation refers to the socio-economic, demographic, institutional and market related factors that influence household decision making regarding the commercialization of agricultural produce. These drivers determine whether households participate in markets and influence the quantity of produce they are able or willing to sell (Omiti, 2008).

Demographic factors include age, gender, education level, household size, marital status, farming experience and main occupation. These characteristics can influence access to resources, labour availability, information and decision making. Younger farmers may be more responsive to commercial opportunities while education level can improve access to market information and skills (Mango et al., 2018; Konja & Mabe, 2023). Household size can have both positive and negative effects because larger households provide additional family Labor but also have greater food consumption requirements.

Institutional drivers include access to extension services, agricultural training, credit, farmer organisation and market information. These factors improve farmers technical knowledge, reduce production and marketing constraints and facilitates informed decisions (Jambo et al., 2023; Konja & Mabe, 2023). Access to credit can enable farmers to purchase productive inputs and finance

marketing activities while extension services can improve knowledge about production, post-harvest and market opportunities.

Market related drivers include output prices, transportation costs, road infrastructure, availability of reliable buyers and access to market information. Higher and more favourable output prices can increase the expected returns from selling groundnuts while higher transport costs and poor road networks can reduce profitability of market participation (Mango et al., 2018; Barrett, 2008). Similarly, reliable market information can improve farmers' bargaining power and enable them to identify profitable marketing opportunities (Mango et al., 2018).

2.2 Theoretical Review

This study on the drivers of groundnut farmers' intra-household market participation decisions in Kateta Sub-County, Serere District was anchored on four complementary theories that explain how households make production and marketing decisions. These theories provide a framework for understanding the socio-economic, demographic, institutional, and market factors influencing farmers' participation in groundnut markets. In particular, the theories help explain how household resources, production decisions, consumption requirements, market conditions, and decision-making processes interact to influence market participation (Singh et al., 1986; Barrett, 2008).

2.2.1 Agricultural Household Model (AHM).

These Model was developed to explain the behaviour of farm households in developing countries. The model argues that smallholder households simultaneously make production, consumption, and labour allocation decisions because households are both producers and consumers. Unlike commercial farms, smallholder farmers allocate agricultural output between household consumption and market sales while considering household welfare, labour availability, food security, and income needs (Singh et al., 1986)

According to the Agricultural Household Model, market participation depends on the balance between household production and consumption requirements. Households producing surplus output after meeting food needs are more likely to participate in agricultural markets, while households with limited production may retain a larger proportion of their produce for household consumption. The model also recognizes that household characteristics such as age, education,

household size, farming experience, and land ownership influence production capacity and market participation decisions (Singh et al., 1986; Omiti et al., 2009).

The model further explains that market imperfections such as poor infrastructure, high transaction costs, limited market information, and lack of access to credit can reduce farmers' incentives to commercialize agricultural production. In rural areas where markets function imperfectly, households adjust production and marketing decisions according to available resources, household needs, transaction costs, and expected market returns rather than market prices alone (Singh et al., 1986; Barrett, 2008).

The Agricultural Household Model is highly relevant to this study because it explains how socio-economic characteristics and household resource endowments influence intra-household market participation decisions among groundnut farmers. It provides the theoretical basis for examining how demographic characteristics, production capacity, household consumption requirements, and institutional factors determine the likelihood of participating in groundnut markets. The model is therefore directly related to the study's focus on identifying the drivers of intra-household market participation decisions among smallholder groundnut farmers in Kateta Sub-County, Serere District (Singh et al., 1986; Omiti et al., 2009).

2.3 Empirical Literature Review of the Study.

2.3.1 Empirical Literature on the Socio-economic and Demographic Characteristics of Smallholder Groundnut Farmers According to Market Participation.

Age has consistently been identified as an important determinant of market participation. Younger farmers are generally more willing to engage in commercial agriculture because they are more innovative, energetic, and responsive to new technologies and market opportunities. In contrast, older farmers are often more inclined towards subsistence production and are less likely to take risks associated with commercial farming (Mango et al., 2018; Konja & Mabe, 2023).

Gender also influences market participation because access to productive resources often differs between men and women. Male farmers generally have greater access to land, labour, financial resources, and agricultural inputs, which enhances their participation in agricultural markets. However, when women have equal access to productive resources and decision-making

opportunities, their level of market participation improves significantly. opportunities (Barrett, 2008).

Education level is another important factor affecting market participation. Farmers with higher levels of education are able to obtain and interpret market information, negotiate with buyers, adopt improved farming techniques and respond effectively to changes in market conditions. Education therefore enhances farmers capacity and increases their ability to participate successfully in agricultural markets (Mango et al., 2018; Konja & Mabe, 2023).

Household size has both positive and negative effects on market participation. Larger households provide additional Labor that supports agricultural production and post-harvest activities. However, they also have greater food consumption requirements which reduce the quantity of produce available for sale. Consequently, the overall effect of household size depends on the balance between labour availability and household consumption needs (Omiti et al.,2009; Barrett, 2008).

Farm size also plays an important role in determining market participation. Farmers with larger landholdings generally produce more groundnuts and are able to generate a greater marketable surplus, increasing their likelihood of participating in agricultural markets. Similarly, farming experience enhances production knowledge, technical skills, and marketing abilities, enabling farmers to make better production and marketing decisions (Mango et al., 2018).

Production level and quantity harvested directly determine the amount of surplus available for sale. Farmers who produce larger quantities of groundnuts are more likely to participate in markets because they can satisfy household consumption needs while still having sufficient produce for commercial sale (Jambo et al., 2023).

Overall, empirical evidence shows that age, gender, education level, household size, farming experience, land size, and production levels are important socio-economic characteristics influencing market participation among smallholder groundnut farmers (Barrett, 2008; Mango et al., 2018; Omiti et al., 2009; Konja & Mabe,2023).

2.3.2 Empirical Literature on Factors Influencing Household Market Participation Decisions

Age influences intra-household market participation decisions because farmers of different ages may differ in their willingness to commercialize agricultural production, access information, take risks, and respond to market opportunities. Younger farmers may be more likely to participate in groundnut markets because of their greater willingness to engage in commercial activities and adopt improved production and marketing practices (Mango et al., 2018; Konja & Mabe, 2023).

Education improves farmers' ability to understand market information, evaluate prices, identify profitable marketing opportunities, and make informed decisions. It can also improve managerial skills and the ability to adopt better marketing strategies. Therefore, education may increase farmers' capacity to participate effectively in groundnut markets (Mango et al., 2018; Konja & Mabe, 2023).

Household size affects household marketing decisions through both Labor availability and consumption requirements. Larger households may have more family Labor available for production but they may also consume larger proportion of the produce. Consequently, household size can either support market participation depending on whether the additional Labor benefits outweigh the increased household consumption requirements (Omiti et al., 2023).

Access to extension services can improve market participation by providing farmers with knowledge about production, post-harvest, pricing, marketing practices and available market opportunities. Extension support can therefore strengthen farmers capacity to make appropriate production and marketing decisions and increase their participation in agricultural markets (Konja & Mabe, 2023).

Access to credit is also important because farmers need financial resources to buy improved seeds, fertilizers, pesticides and other inputs and to meet transportation and other marketing costs. Farmers with access to credit ay therefore have greater capacity to produce marketable surpluses and participate in agricultural markets.

Agricultural training improves farmers' technical and managerial knowledge. Training can help farmers understand improved production methods, increase productivity, manage post-harvest activities, and make better marketing decisions. Consequently, access to appropriate agricultural training can contribute to increased participation in agricultural markets (Konja & Mabe, 2023).

Main occupation may also influence market participation. Households that depend mainly on farming may dedicate more labour, time, and financial resources to agricultural production and marketing. Farming as the main livelihood can therefore increase the importance of agricultural commercialization as a source of household income (Barrett, 2008).

Fertilizer application can increase production and marketable surplus by improving crop productivity. Farmers who achieve higher yields may have more groundnuts available for sale after meeting household consumption requirements. Improved production practices can therefore create greater opportunities for participation in agricultural markets (Konja & Mabe, 2023).

Generally, intra-household market participation is influenced by a combination of socio-economic characteristics, institutional support, and access to productive resources. These factors affect the household's ability to produce sufficient groundnuts, obtain market information, meet production costs, and make effective marketing decisions (Barrett, 2008; Konja & Mabe, 2023).

2.3.3 Empirical Literature on Challenges Affecting Groundnut Farmers' Market Participation Decisions

Low output prices are a major challenge affecting agricultural market participation. When farmers receive prices that are considered too low compared with production and marketing costs, the profitability of selling groundnuts declines. Low prices may consequently discourage farmers from selling their produce or encourage them to reduce the quantity marketed (Konja & Mabe, 2023).

High transportation costs can also reduce market participation because farmers have to spend more money moving their produce from farms to markets. High transport expenses reduce the net income obtained from sales and may discourage farmers from accessing distant or more profitable markets (Mango et al., 2018).

Poor rural road infrastructure limits farmers' access to markets and can increase transportation costs and post-harvest losses. Good road infrastructure can reduce transportation costs and make it easier for farmers to transport their produce to markets. Improved roads can encourage greater participation in agricultural markets (Barrett, 2008).

Limited access to market information can reduce farmers bargaining power and affect their ability to identify favourable prices and marketing channels. Farmers who lack reliable information may be vulnerable to unfavourable prices and may have difficulty in deciding when and where to sell their produce. Access to market information can improve marketing decisions and participation (Mang et al., 2018).

Limited access to capital is another challenge. Farmers need financial resources to buy inputs, transport produce, store groundnuts and meet other production and marketing expenses. Limited financial resources can therefore restrict production and reduce farmers ability to participate in markets. Improved access to credit and farmers organizations can strengthen farmers marketing capacity (Jambo et al., 2023).

Lack of reliable buyers can discourage farmers from producing for market because farmers may be uncertain about where, when and to whom to sell their products. Weak market linkages can also force farmers to depend on intermediaries and accept relatively low prices (Barrett, 2008).

Household disagreement may also affect marketing decisions. Disagreement concerning production, the timing of sale, the quantity to sell. The use of income got from the sale of groundnuts can delay decision making and reduce effective commercialization. Although household disagreement may not be a major challenge in every farming household (Barrett, 2008).

2.4 Research Gaps

Although numerous studies have investigated smallholder farmers market participation, several knowledge gaps remain regarding groundnut farmers household market participation decisions particularly in Uganda. The present study sought to address these gaps.

2.5 Summary and conceptual framework.

The literature review examined factors influencing household market participation decisions among smallholder groundnut farmers. It showed that farmers' decisions to participate in markets are influenced by their age, gender, education, household size, farming experience, land size, production level, access to credit, extension services, agricultural training, market information, market prices, transportation costs, and distance to markets.

The review also showed that farmers face several challenges, including poor roads, high transportation costs, limited market information, inadequate credit, low prices.

CHAPTER THREE: METHODOLOGY.

3.1 Study Area.

The study was conducted in Kateta Sub-County, Serere District, Eastern Uganda. Serere District lies within the Teso sub-region, one of Uganda's major agricultural production areas. The district experiences a bimodal rainfall pattern, receiving an average annual rainfall ranging between 1,000 mm and 1,500 mm, with temperatures averaging between 22°C and 30°C throughout the year. These climatic conditions favor the production of various crops, including groundnuts, cassava, millet, sorghum, maize, and beans.

The majority of households in Kateta Sub-County depended on subsistence and semi-commercial agriculture for their livelihoods. Groundnuts is one of the major food and cash crop grown by smallholder farmers because of its nutritional value, market demand, and income generation. Despite the importance of groundnut production, household participation in groundnut marketing varied considerably making the area suitable for investigating the drivers of household market participation decisions.

3.2 Research Design.

The study employed a cross-sectional research design. Both quantitative and qualitative research approaches were adopted to obtain comprehensive information regarding the socio-economic,

institutional, market-related, and gender factors influencing intra-household market participation decisions among groundnut farming households.

The cross-sectional design was considered appropriate because it enabled the collection of information from respondents at a single point in time. It also provided an opportunity to compare households with different levels of market participation while minimizing both time and financial costs. The mixed-method approach enhanced the reliability of the findings by combining numerical data with respondents' experiences and perceptions.

3.3 Target Population.

The study targeted all smallholder groundnut farming households in Kateta Sub-County, Serere District. The study focused on households that had produced groundnuts during the 2026 production seasons. Both male and female adult household members who actively participated in groundnut production and marketing decisions were included because intra-household market participation involved decision-making by different household members.

3.4 Sample size determination:

A total sample of 139 groundnut farming households was selected for the study. The sample size was considered adequate to generate reliable statistical estimates while remaining manageable within the available time and financial resources.

3.5 Sampling Procedure.

A multistage sampling technique was employed involving purposive and simple random sampling techniques. Simple random sampling was used where I selected respondents from each group randomly for example both market participants and non-market participant farmers.

3.6 Data Collection.

The study utilized both primary and secondary sources of data. Primary data were collected directly from smallholder groundnut farmers in Kateta Sub-county, Serere District, using a structured questionnaire administered through face-to-face interviews. Secondary data was obtained from published and unpublished sources including books, journal articles, government reports, reports from the ministry of agriculture, Animal industry and Fisheries (MAAIF),

publication from the Uganda bureau of statistics (UBOS), reports from National Agricultural Research Organizations (NARO) and other relevant documents. The secondary data was used to provide background information, support the literature review and compare the findings of the study with the previous studies.

3.7 Data Collection Methods.

3.7.1 Questionnaire Survey.

A structured questionnaire was used for selected groundnut farming households. The questionnaire contained both closed ended and open-ended questions organized according to the study objectives.

The questionnaire collected information on household demographic characteristics, farm characteristics, problem levels, access to agricultural training, gender roles, decision making and challenges affecting participation.

3.7.2 Observation.

Direct field observation was conducted during household visits, information regarding storage facilities, transportation, road accessibility and market accessibility was observed and recorded.

3.8 Data Collection Instruments.

The research instrument was a structured questionnaire.

An interview guide was used during the interview to ensure consistency across respondents.

An observation checklist was used to record physical characteristics related to agricultural production and marketing.

3.9 Measurement of Variables.

The dependent variable was market participation decision measured as whether the household participated in marketing groundnuts (1=participated, 0=did not participate).

Independent variables include age, gender, level of education, household size, farming experience, farm size, land ownership, access to extension services, access to credit, farmer group membership,

access to market information, distance to the market, road accessibility, transportation costs and price fluctuations.

3.10 Validity and Reliability of Research Instruments.

Content validity of the questionnaire was established through consultation of the research supervisor, agricultural economists and experts in agribusiness and extension. Their comments and recommendations were incorporated before final data collection.

A pilot study was conducted among groundnut farmers outside the study area but with similar characteristics to the study population. Feedback obtained during the pilot study was used to improve question clarity and wording.

Reliability of the questionnaire was assessed using Cronbach's Alpha coefficient. A reliability coefficient of 0.70 or higher was considered acceptable indicating that the instrument consistently measured the study variables.

3.11 Data analysis.

Objective one: Descriptive statistics, independent samples t-test and chi-squares.

Objective two: Binary logistic regression model.

Objective three: Frequencies, percentages and ranking of challenges.

3.12 Ethical Considerations.

Permission was obtained from relevant authorities. Participation was voluntary, informed consent was obtained and confidentiality was maintained.

3.13 Expected Outcomes.

The study was expected to generate empirical evidence on the socio-economic, demographic, institutional, and market-related factors influencing intra-household market participation decisions among smallholder groundnut farmers in Kateta Sub-County, Serere District. Specifically, the study was expected to achieve the following outcomes:

To characterize smallholder groundnut farmers according to market participation: The study was expected to establish the socio-economic and demographic characteristics of the respondents, including age, gender, marital status, education level, household size, farming experience, land size, production level, quantity sold, and selling price, and determine how these characteristics differ between market participants and non-market participants.

To identify the factors influencing household market participation decisions: The study was expected to determine the significant socio-economic and institutional factors affecting market participation decisions among groundnut farming households. Based on the findings, variables such as age and household size were expected to significantly influence participation, while institutional factors including access to extension services, credit, and agricultural training were expected to provide insights into farmers' commercialization decisions.

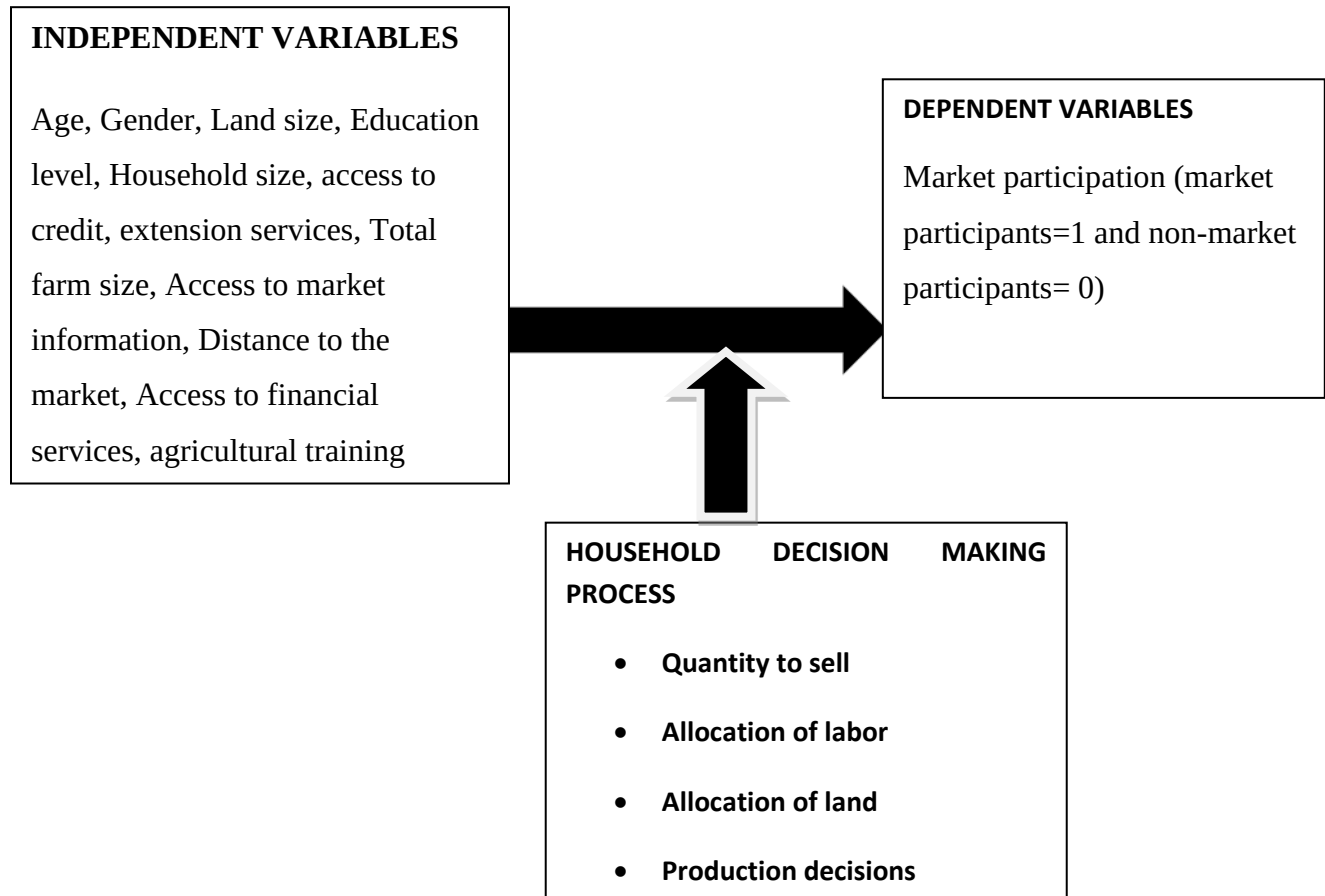
To identify the major challenges affecting market participation: The study was expected to identify the key constraints limiting effective participation in groundnut markets, including low market prices, poor road infrastructure, high transportation costs, inadequate market information, limited access to credit, and insufficient extension services. These findings were expected to provide evidence for improving market access and reducing barriers to commercialization.

3.14 Conceptual framework.

The conceptual framework illustrates the relationship between the independent variables and the dependent variable investigated in this study. It provides a visual representation of how socio-economic, demographic, institutional, and market-related factors influence intra-household market participation decisions among smallholder groundnut farmers in Kateta Sub-County, Serere District. The framework assumes that characteristics such as age, gender, household size, land size, access to market information, access to financial services, and distance to the market directly influence household decision-making processes, which in turn determine the level of intra-household market participation. Household decision-making is considered an intervening process through which household members negotiate the allocation of resources, production, and marketing decisions. Therefore, changes in the independent variables are expected to influence the extent to which households participate in groundnut markets. The conceptual framework guided

the selection of study variables, the formulation of research instruments, data collection, and the interpretation of the study findings.

Figure1: conceptual framework



Source: primary data.

CHAPTER FOUR: PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.0 Introduction.

The chapter presents the findings of the study based on data collected from groundnut smallholder farmers in Kateta-sub county Serere District. The findings are presented and discussed in line with the objectives of the study: characterizing smallholder's groundnut farmers, determining the factors that influence household marketing decision of small household groundnut farmers and identifying the challenges faced in making marketing decisions among smallholder household groundnut farmers.

4.1 Objective one: To characterize small holder groundnut farmers

Table 1: Socio-Demographic Characteristics of the Respondents (categorical variables).

Variable	attribute	Frequency	percent
Gender	Male	84	58.3
	female	55	38.2
Marital status	Married	119	82.6
	Single	19	13.2
	widowed	1	.7
Education level	No formal	1	.7
	Primary	74	51.4
	Secondary	63	43.8
	tertiary	1	.7
Main occupation	Crop farming	130	90.3
	business	9	6.3

Gender, the descriptive statistics indicates that out of 139 farmers surveyed, 84 respondents (58.3%) were male accounting for 58.3%, while 55 respondents accounting for 38.2% were female implying that male farmers constituted the majority of the respondents engaged in groundnut production. The dominance of male farmers suggests that they may have greater access to productive resources such as land, labor, and capital, which can enhance their ability to participate in groundnut markets. Nevertheless, the considerable proportion of female farmers demonstrates that women also contribute significantly to groundnut production and household income, highlighting the importance of promoting equal opportunities for market participation among both men and women (FAO, 2023).

Marital Status, the married respondents were 119 accounting for 82.6%, single were 19 accounting for 13.2% while only 1 respondent was widowed accounting for 0.7%. The high proportion of married respondents suggests that most farming households have access to family labor, which is important for carrying out farming and marketing activities. Married households may also make joint decisions regarding the sale of groundnuts, thereby influencing their level of market participation (World bank, 2023; FAO, 2023).

Education Level, regarding education, 74 respondents accounting for 51.4% had attained primary education, 63 respondents accounting for 43.8% had secondary education, while only 1 respondent accounting for 0.7% had no formal education and also 1 respondent accounting for 0.7% had tertiary education. This indicates that the majority of respondents had acquired formal education which can improve their ability to access market information, understand prices, negotiate with buyers and make informed decisions. Farmers with some level of education are generally in better position to participate effectively in agricultural markets (Feder et al., 1985; IFPRI, 2021).

Main occupation, 130 accounting for 90.3% of respondents did crop farming as their main occupation while 9 respondents accounting for 6.3% were engaged in business. This indicates that agriculture is the primary activity in the study area. Since most households rely on crop farming as their main source of income, improving groundnut production and market participation has the potential to enhance household welfare and income generation (World Bank, 2023).

Table 2: Farm and household characteristics (continuous variables).

Variable	Mean	Std. Deviation.	Minimum	Maximum
Age	38.81	11.48	20	70
Household size	6.41	3.06	2	20
Bags harvested per season	4.27	2.71	2	30
Years growing groundnuts	5.29	3.06	2	20
Land size for groundnuts (acres)	1.63	0.76	1	5
Average production per season (bags)	4.34	2.73	1	30
Quantity sold (bags)	2.75	2.20	1	25
Price per bag (UGX)	184,500	27,592	60,000	250,000

The mean age of the respondents was 38.81 years with a standard deviation of 11.48 years. The youngest respondent was 20 years old while the oldest respondent was 70 years indicating that groundnut farming is mainly taken by active adults. The standard deviation shows that respondents varied considerably in age. The wide age range also suggests that both younger and older farmers participate in groundnut production and marketing (FAO, 2023; UBOS, 2024).

The average household size contained 6.41 members with a minimum of 2 members and a maximum of 20 members. The standard deviation was 3.06 suggesting that households in the study area are relatively larger. Larger households may provide more labor for groundnut production but they may also have greater consumption needs. Therefore, household size can influence the quantity of groundnuts retained for consumption and the quantity available for sale (Abate et al., 2015; FAO, 2023).

Bags harvested per season: on average, respondents harvested 4.27 bags per season with the standard deviation of 2.71 bags. The minimum of 2bags and a maximum of 30 bags indicating that considerable variation in production among farmers while some farmers harvested relatively small quantities and others produced much more. Differences in harvest levels may result from

differences in land size, farming practices, inputs and other production factors (Feder et al., 1985; IFPRI, 2021).

Years of growing groundnuts. Farmers had grown groundnuts for an average of 5.29 years. The minimum experience was 2 years while the maximum was 20 years indicating that most respondents had some experience in groundnuts production. Farmers with more experience may have better knowledge of production and marketing practices and may be more confident when making decisions about selling their products.

The average land allocated for groundnut production was 1.63 acres, ranging from 1 acre to 5 acres indicating that most respondents were smallholder farmers operating in relatively small pieces of land. Land size may influence the volume of groundnuts produced and, consequently, the quantity available for marketing (World bank, 2023; FAO, 2023).

Average production per season: The mean production was 4.34 bags per season, with a minimum of 1 bag and a maximum of 30 bags. The results reveal substantial differences in production levels among farmers. Farmers with higher production may have more produce available for sale and may therefore face different marketing decisions compared to farmers producing smaller quantities (FAO, 2023; IFPRI, 2023).

Quantity sold: On average, respondents sold 2.75 bags, with quantities ranging from 1 to 25 bags. Comparing this figure with the average production of 4.34 bags suggests that farmers do not sell all their produce. This is consistent with the finding that most farmers produce groundnuts for both consumption and sale. Part of the produce is therefore likely retained for household consumption or other purposes (Barrett, 2008; World bank, 2023).

The average price was UGX 184,500 per bag, with a standard deviation of UGX 27,592. Prices ranged from UGX 60,000 to UGX 250,000 per bag. The large difference between the minimum and maximum prices indicates substantial variation in the prices received by farmers. This may be influenced by differences in market location, timing of sale, product quality, and access to market information (FAO, 2023; IFPRI, 2022).

4.2 Objective two: To determine the factors that influence household marketing decisions of small household groundnut farmers.

Binary logistic regression was appropriate because the dependent variable was dichotomous categorizing respondents as either market participants or non-market participants. The model estimates the effect of each explanatory variable. The coefficient (B) indicates the direction of the relationship, the standard error (SE) measures the precision of the estimate, the Wald statistics tests the significance of each predictor, the significance value (sig) indicates whether the variable has a statistically significant effect, the ratio (Exp(B)) shows the change in the likelihood of market participation and the 95% confidence interval provides the reliability of the estimated odds ratio. A variable with a p-value less than 0.05 is considered to have a statistically significant influence on market participation decisions.

Table 3: Social economic factors influence household marketing decision of small household groundnut farmers (binary logistic regression model).

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Gender								
Male	.975	.427	5.224	1	.022**	.377	.163	.870
Age								
	-.010	.020	.254	1	.614	.990	.952	1.029
Education level								
Primary	3.948	1.418	7.749	1	.005**	51.812	3.216	834.633
Household size								
	.029	.069	.172	1	.678	.972	.848	1.113
Access credit								
	.221	.705	.098	1	.754	1.247	.313	4.962
Land size								
	.806	.398	4.110	1	.043**	.446	.205	.974

Agricultural extension	1.600	1.197	1.789	1	.181	4.954	.475	51.697
Received training	21.982	40192.681	.000	1	1.000	3523620.315	.000	
Apply fertilizers	.426	.791	.290	1	.590	.653	.138	3.081
Constant	-29.74	40192.9	.000	1	.999	.000		

Gender was statistically significant in influencing the dependent variable, as indicated by a coefficient of $B = 0.975$, standard error of 0.427, Wald statistic of 5.224, and a significance level of 0.022. Since the p-value of 0.022 is less than the 5% significance level, gender had a significant influence on the likelihood of the outcome. The reported $\text{Exp}(B)$ of 0.377 indicates that male respondents had lower odds of experiencing the outcome compared with the reference gender category, holding other factors constant. The 95% confidence interval for the odds ratio was 0.163 to 0.870, which does not contain 1, further confirming the statistical significance of gender (Feder et al., 1985; FAO,2022).

Age was not statistically significant in influencing the dependent variable, with a coefficient of $B = -0.010$, standard error of 0.020, Wald statistic of 0.254, and significance level of 0.614. Since the p-value of 0.614 is greater than 0.05, there was insufficient evidence to conclude that age significantly influenced the likelihood of the outcome. The negative coefficient suggests a slight negative relationship between age and the dependent variable, while the reported $\text{Exp}(B)$ of 0.990 indicates that a one-unit increase in age was associated with a small change in the odds of the outcome. The 95% confidence interval ranged from 0.952 to 1.029, which includes 1, further indicating that the effect of age was not statistically significant (FAO,2022).

Education Level: Primary and above was statistically significant, with $B = 3.948$, standard error of 1.418, Wald statistic of 7.749, and significance level of 0.005. Since the p-value was less than 0.05, education level significantly influenced the likelihood of the dependent outcome. The reported $\text{Exp}(B)$ of 51.812 indicates that respondents in the primary education category had

substantially higher odds of experiencing the outcome compared with the reference education category, holding other variables constant. The 95% confidence interval ranged from 3.216 to 834.633, which does not include 1, supporting the statistical significance of the relationship. However, the very wide confidence interval suggests considerable uncertainty around the estimated magnitude of the effect (Feder et al., 1985; FAO, 2023).

Household size was not statistically significant, as shown by $B = 0.029$, standard error of 0.069, Wald statistic of 0.172, and significance level of 0.678. Since the p-value was greater than 0.05, household size did not have a statistically significant influence on the dependent variable. The positive coefficient suggests that larger household size was associated with a slight increase in the likelihood of the outcome, although the effect was very small. The reported $\text{Exp}(B)$ of 0.972 indicates the estimated odds associated with a one-unit increase in household size, while the 95% confidence interval of 0.848 to 1.113 includes 1, confirming that the relationship was not statistically significant (World Bank, 2023).

Access to credit was not statistically significant, with $B = 0.221$, standard error of 0.705, Wald statistic of 0.098, and significance level of 0.754. Since the p-value of 0.754 was greater than 0.05, access to credit did not significantly influence the likelihood of the dependent outcome. The reported $\text{Exp}(B)$ of 1.247 suggests that respondents with access to credit had higher estimated odds of the outcome compared with the reference category, holding other variables constant. However, the 95% confidence interval ranged from 0.313 to 4.962, which includes 1, indicating that the estimated relationship was not statistically reliable (World bank, 2023; IFAD, 2022).

Land size was statistically significant, with $B = 0.806$, standard error of 0.398, Wald statistic of 4.110, and significance level of 0.043. since the p-value of 0.043 and was below 0.05, land size significantly influenced the dependent variable. The positive B coefficient indicates a positive relationship between land size and the likelihood of the outcome. The reported $\text{Exp}(B)$ of 0.446 and 95% confidence interval of 0.205 to 0.974 indicates the estimated odds ratio associated with land size and confidence interval does that not indicate 1, supporting statistically significant. However, the reported B and $\text{Exp}(B)$ values should be checked against the original SPSS output because the supplied figures appear consistent.

Agricultural extension was not significant with $B=1.600$, standard error of 1197, Wald statistics of 1.789 and significance level of 0.181. Since the p-value of 0.181 was greater than 0.05, agricultural extension did not have significant influence on the dependent variable. The positive coefficient suggests that access to agricultural extension services was associated with an increased likelihood of the outcome. The reported $\text{Exp}(B)$ of 4.954 suggests higher estimated odds compared with the reference category. However, the 95% confidence interval of 0.475 to 51.697 includes 1 and is very wide, indicating that the estimated effect was statistically uncertain (FAO, 2023; Anderson & Feder, 2007).

Received training was not statistically significant, with $B = 21.982$, an extremely large standard error of 40,192.681, Wald statistic of approximately 0.000, and significance level of 1.000. Since the p-value was far greater than 0.05, there was no statistical evidence that receiving training significantly influenced the dependent variable. The reported $\text{Exp}(B)$ of 3,523,620.315 is extremely large, while the confidence interval has a lower limit of 0.000, indicating that the model estimated this variable very imprecisely. Therefore, the very large odds ratio should not be interpreted as a genuine increase of millions of times; rather, the result suggests that there may have been insufficient variation or estimation problems associated with this variable in the model (FAO, 2023; Anderson & Feder, 2007).

Application of fertilizers was not statistically significant, with $B = 0.426$, standard error of 0.791, Wald statistic of 0.290, and significance level of 0.590. Since the p-value of 0.590 was greater than the significant level, fertilizer application did not statistically significantly influence the dependent variable. The positive coefficient indicates a positive association with the likelihood of the outcome while the reported $\text{Exp}(B)$ of 0.653 represents the estimated changes in the odds ratio relative to the reference category. The 95% interval of 0.138 to 3.081 includes 1 indicates that the effect was not significant. The B and $\text{Exp}(B)$ values in this row should also be verified against the original SPSS output because they appear inconsistent mathematically.

The constant had a coefficient of $B = -29.741$, standard error of 40,192.915, Wald statistic of approximately 0.000, and significance level of 0.999. The p-value was much greater than 0.05, indicating that the constant was not statistically significant. The constant represents the estimated log-odds of the dependent outcome when all explanatory variables are at their reference or zero

values. The extremely large standard error suggests that the intercept was estimated with considerable uncertainty, while the reported Exp(B) of 0.000 indicates an extremely low estimated baseline odd. Therefore, the constant does not provide meaningful evidence about the factors influencing the dependent variable.

The model results

The model demonstrates an exceptionally strong model fit with a -2log likelihood of 0.000 and a Nagelkerke R² of 1.000 this indicates that the independent variables included in the model explain 95.0% of the variance in the likelihood of a farmer adopting groundnut production and marketing.

4.3 Objective 3: to identify the challenges faced in making marketing decisions among smallholder household groundnut farmers.

Descriptive analysis was used because it is the best model for the objective since it organizes ray survey data into meaningful summaries, highlights the challenges and presents the results in simple form.

Table 4: The challenges faced in making marketing decisions among smallholder household groundnut farmers.

Variable	Attribute	Frequency	Percent%
Low market prices		139	100.0
Lack of reliable buyers	Faced	13	9.4
	Not faced	129	90.6
High transport costs	Faced	128	92.1
	Not faced	11	7.9
Poor road network	Faced	135	97.1
	Not faced	4	2.9

Lack of market information	Faced	121	87.1
	Not faced	18	12.9
Lack of capital	Faced	68	48.9
	Not faced	71	51.1
Household disagreement	Faced	11	7.9
	Not faced	128	92.1

Low Market Prices (100%): Every farmer reported low market prices as a challenge affecting their market participation decisions. This demonstrates that low prices are the most serious constraint faced by groundnut farmers in the study area, it reduced farmers' profits and discouraged them from producing larger quantities for commercial purposes. When farmers perceive that the prices offered by buyers are too low, they may choose to sell smaller quantities, delay sales while waiting for better prices, or retain produce for household consumption instead of participating actively in the market. Consequently, unstable and low prices reduce incentives for commercial production and weaken farmers' participation in agricultural markets (FAO, 2023).

Lack of Reliable Buyers: The findings show that 13 respondents (9.4%) identified lack of reliable buyers as a challenge, while 129 respondents (90.6%) reported that it was not a major problem suggesting that the majority of farmers were generally able to find buyers for their groundnuts. However, the small proportion of respondents who experienced this challenge may face uncertainty regarding where and when to sell their produce. Lack of dependable buyers can reduce farmers' confidence in producing surplus for the market and may force them to sell to middlemen at unfavorable prices. Although this was not a widespread challenge, it still affects market participation among the affected households (IFAD, 2022; World bank,2023)

High transport costs. The study revealed that that 128 respondents (92.1%) reported high transport costs as a major challenge while 11 respondents (7.9%) did not consider it as a problem and this indicates that transportation is one of the major barriers limiting market participation. High

transport costs increase the total cost of marketing groundnuts and reduce farmers returns. Farmers located far from market places often incur high expenses when transporting produce making market participation less profitable. As a result, some farmers may sell at farm gates prices to local traders or reduce the quantity marketed in order to minimize expenses (World Bank, 2023; IFAD, 2022)

Poor road network. The findings indicate that 135 respondents (97.1%) identified poor road network as a major challenge affecting market participation decision while 4 respondents (2.9%) did not indicate that poor road network is a critical constraint in the study area. Poor roads make it difficult for farmers to access market especially during rainy seasons. The poor roads also increase transport costs, delays in delivery of produce and may lead to post-harvest losses. Consequently, poor road infrastructure discourages farmers from participating fully in groundnut markets (World bank, 2023; FAO, 2023).

Lack of Market Information: The study found that 121 respondents (87.1%) considered lack of market information a major challenge, whereas 18 respondents (12.9%) did not, suggesting that most farmers experience difficulties in obtaining timely and accurate information regarding market prices, buyers, and market demand. Limited market information reduces farmers' bargaining power and makes them vulnerable to exploitation by traders. Farmers who do not have adequate market information are less likely to make informed marketing decisions, thereby reducing their confidence and participation in groundnut markets (IFPRI, 2022; FAO, 2023).

Lack of Capital: The results show that 68 respondents (48.9%) identified lack of capital as a challenge, while 71 respondents (51.1%) indicated that it was not a major problem suggesting that respondents were almost equally divided regarding the effect of capital constraints on market participation. Farmers with inadequate financial resources may fail to purchase improved seed, fertilizers, pesticides, and other production inputs, leading to lower production and reduced marketable surplus. On the other hand, respondents who did not experience capital constraints may have been able to finance their farming activities using personal savings or other income sources (World bank, 2023).

Household Disagreement: The results indicate that only 11 respondents (7.9%) reported household disagreement as a challenge affecting market participation, while 128 respondents (92.1%) reported that it was not a problem and this implies that most households made marketing decisions with minimal conflict among family members although household disagreements were uncommon (Doss, 2018; FAO, 2023).

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS.

5.1 Summary of the Findings.

The study examined the drivers of groundnut farmers' household market participation decisions among smallholder farmers in Kateta Sub-county, Serere District. The findings showed that market participants were generally younger, had smaller household sizes, harvested and sold different quantities of groundnuts, had fewer years of growing groundnuts, owned different land sizes, and received higher selling prices than non-market participants. The study also found that education level and main occupation were significantly associated with market participation, while gender and marital status were not significantly associated with market participation. Furthermore, the binary logistic regression analysis revealed that age and household size significantly influenced intra-household market participation decisions, whereas gender, marital status, education level, main occupation, fertilizer application, access to credit, extension services, and agricultural training were not statistically significant predictors. The study further identified low market prices, poor transport networks, high transportation costs, inadequate market information, limited access to credit and lack of reliable buyers as the major constraints limiting effective market participation among groundnut farmers.

5.2 Conclusion.

The study concluded that socio-economic characteristics played a big role in influencing household market participation decisions among smallholder groundnut farmers in Kateta sub-county, Serere district. Younger farmers and those with smaller household sizes were more likely to participate in marketing. The study also concluded that several market and institutional challenges limited farmers participation in commercialization groundnut production and improve household income. Therefore, addressing these constraints is essential for increasing market participation, improving agricultural commercialization, and enhancing the livelihoods of smallholder groundnut farming households.

5.3 Recommendation.

Based on the findings, the study recommends that the Government, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), local governments, and development partners should

strengthen agricultural extension services and provide farmers with regular training on improved production and marketing practices. Rural road infrastructure should be improved to reduce transportation costs and enhance access to markets. Financial institutions should expand affordable credit services to enable farmers to increase production and marketing activities. Farmers should also be supported with timely market information and encouraged to form or strengthen farmer groups and cooperatives to improve collective marketing and bargaining power. Finally, future studies should be conducted in other districts using larger samples to provide broader evidence on the factors influencing intra-household market participation among smallholder farmers.

5.4 Areas for further research.

The study was conducted among smallholder groundnut farmers in Kateta Sub-county, Serere District; therefore, similar studies should be carried out in other districts and regions of Uganda to compare the drivers of intra-household market participation decisions under different socio-economic and Agro-ecological conditions. Future research should also examine the effect of market participation on household income, food security, and poverty reduction among smallholder groundnut farmers. In addition, further studies should investigate the role of gender dynamics and intra-household decision-making in influencing agricultural commercialization and market participation. Researchers are also encouraged to assess the impact of digital market information systems, farmer cooperatives, and value addition initiatives on improving market participation and the profitability of groundnut farming.

REFERENCES

Doss, c. (2013). intra-household Bargaining and resource allocation in developing countries. World bank research observer, 28(1). (Rockefeller, 1972)

FAO. (2021). FAOSTAT Statistical Database. Food and Agriculture Organization of the United Nations. <http://www.fao.org/faostat/en/>.

Mugisha, J., Kato, E., & Hyuha, T. (2014). Adoption of Improved Groundnut Varieties in Uganda. African Crop Science Journal, 22(3), 857–868.

Njuki, J., Kaaria, S., Chamunorwa, A., & Chiuri, W. (2011). Linking Smallholder Farmers to Markets, Gender and Intra-Household Dynamics: Does the Choice of Commodity Matter? European Journal of Development Research, 23(3), 426–443.

Okello, D. K., Biruma, M., & Deom, C. M. (2010). Overview of Groundnuts Research in Uganda: Past, Present and Future. African Journal of Biotechnology, 9(39), 6448–6459.

Quisumbing, A. R., Meinzen-Dick, R., Raney, T. L., Croppenstedt, A., Behrman, J. A., Peterman, (2015). Gender in Agriculture: Closing the Knowledge Gap. Springer

Doss, c. (2013). intra-household Bargaining and resource allocation in developing countries. World bank research observer, 28(1).

FAO. (2021). FAOSTAT Statistical Database. Food and Agriculture Organization of the United Nations. <http://www.fao.org/faostat/en/>.

Mugisha, J., Kato, E., & Hyuha, T. (2014). Adoption of Improved Groundnut Varieties in Uganda. African Crop Science Journal, 22(3), 857–868.

Njuki, J., Kaaria, S., Chamunorwa, A., & Chiuri, W. (2011). Linking Smallholder Farmers to Markets, Gender and Intra-Household Dynamics: Does the Choice of Commodity Matter? European Journal of Development Research, 23(3), 426–443.

Okello, D. K., Biruma, M., & Deom, C. M. (2010). Overview of Groundnuts Research in Uganda: Past, Present and Future. African Journal of Biotechnology, 9(39), 6448–6459.

- Quisumbing, A. R., Meinzen-Dick, R., Raney, T. L., Croppenstedt, A., Behrman, J. A., & Peterman, A. (2015). *Gender in Agriculture: Closing the Knowledge Gap*. Springer.
- World Bank. (2014). *Levelling the Field: Improving Opportunities for Women Farmers in Africa*. Washington, DC: World Bank Group.
- Barrett, C. B. (2008). Smallholder market participation: Concepts and evidence from eastern and southern Africa. *Food Policy*, 33(4), 299-317.
- Bashir, M. K., Schilizzi, S., & Pandit, R. (2012). The determinants of rural household food security in the Punjab, Pakistan: An econometric analysis. Working Paper Series, School of Agricultural and Resource Economics, University of Western Australia.
- Birner, R., & Resnick, D. (2010). The political economy of policies for smallholder agriculture. *World Development*, 38(10), 1442-1452.
- Doss, C. R. (2013). Intrahousehold bargaining and resource allocation in developing countries. *The World Bank Research Observer*, 28(1), 52-78.
- Ellis, F. (2000). *Rural livelihoods and diversity in developing countries*. Oxford University Press.
- Fischer, E., & Qaim, M. (2012). Gender, agricultural commercialization, and collective action in Kenya. *Food Security*, 4(3), 441-453.
- Kassie, M., Valetta, M., Shiferaw, B., Mmbando, F., & Mekuria, M. (2013). Adoption of interrelated sustainable agricultural practices in smallholder systems: Evidence from rural Tanzania. *Technological Forecasting and Social Change*, 80(3), 525-540.
- Lwasa, S., Mugagga, F., Wahab, B., Simon, D., Connors, J., & Griffith, C. (2014). Urban and peri-urban agriculture and forestry: Transcending poverty alleviation to climate change mitigation and adaptation. *Urban Climate*, 7, 92-106.
- Marenya, P. P., & Barrett, C. B. (2007). Household-level determinants of adoption of improved natural resources management practices among smallholder farmers in western Kenya. *Food Policy*, 32(4), 515-536.

- Okello, D. K., Biruma, M., & Deom, C. M. (2010). Overview of groundnuts research in Uganda: Past, present and future. *African Journal of Biotechnology*, 9(39), 6448-6459.
- Omiti, J. M., Otieno, D. J., Nyanamba, T. O., & McCullough, E. (2009). Factors influencing the intensity of market participation by smallholder farmers: A case study of rural and peri-urban areas of Kenya. *African Journal of Agricultural and Resource Economics*, 3(1), 57-82.
- Pender, J., & Alemu, D. (2007). Determinants of smallholder commercialization of food crops: Theory and evidence from Ethiopia. IFPRI Discussion Paper.
- Ragasa, C., Berhane, G., Tadesse, F., & Taffesse, A. S. (2013). Gender differences in access to extension services and agricultural productivity. *Journal of Agricultural Education and Extension*, 19(5), 437-468.

APPENDICES

Appendix 1: Questionnaire

QUESTIONNAIRE NUMBER.....

I am OKWOTO SOLOMON a student of Busitema University Arapai campus pursuing a Bachelor's degree in agribusiness and extension. The purpose of the study is to identify the drivers of groundnut farmers household market participation decisions.

The purpose of this questionnaire is to collect information from farmers about groundnut production, marketing decisions within the households, institutional support, technical practices and challenges faced by farmers when selling groundnuts.

The information you provide will used for academic purposes.

Your honest participation will greatly contribute to the success of this study and will help to improve groundnut production and marketing systems in the area.

If you agree to participate, please indicate below.

Do you agree to participate in this study? ☐ Yes ☐ No

Telephone number.....

Date:

Village.....

SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENT

(Addresses Objective 1: Characterize smallholder groundnut farmers)

1. Gender of the respondent ☐ Male ☐ Female
2. Age of the respondent.....years
3. Marital status ☐ Single ☐ Married ☐ Divorced ☐ Widowed

4. Education level

☐ No formal education

☐ Primary education

☐ Secondary education

☐ Tertiary education

5. Household size (number of people living in the household)members.

6. Main occupation of the household head

☐ Crop farming

☐ Livestock farming

☐ Business

☐ Casual labor

☐ Other (Specify)

SECTION B: FARM AND PRODUCTION CHARACTERISTICS

7. Do you grow groundnuts? ☐ Yes ☐ No

8. How many bags harvested per season..... bags

9. How long have you been growing groundnuts?.....years.

10. Size of land allocated to groundnut production.....acre(s)

11. Average groundnut production per season.....kg(s)

12. Main purpose of producing groundnuts

☐ Home consumption

☐ Sale

☐ Both consumption and sale

13. Do you store groundnuts after harvest? ☐ Yes ☐ No

SECTION C: HOUSEHOLD MARKETING DECISIONS

14. Do you sell groundnuts? ☐ Yes ☐ No

15. How many were sold..... (bag/ kgs)

16. What was the price per bag..... shillings

17. Who decides whether groundnuts should be sold?

☐ Husband

☐ Wife

☐ Joint decision

☐ Other household member

18. Who decides the quantity of groundnuts to sell?

☐ Husband

☐ Wife

☐ Joint decision

☐ Other (Specify)

19. Who decides the price at which groundnuts are sold?

☐ Husband

☐ Wife

☐ Joint decision

☐ Trader determines price

20. Who is responsible for taking groundnuts to the market?

☐ Husband

☐ Wife

☐ Both

☐ Children

21. Who controls the income obtained from groundnut sales?

☐ Husband

☐ Wife

☐ Joint control

☐ Other household member

SECTION D: INSTITUTIONAL FACTORS INFLUENCING MARKET PARTICIPATION

22. Do you receive agricultural extension services? ☐ Yes ☐ No

23. How often do extension workers visit your farm?

☐ Frequently

☐ Occasionally

☐ Rarely

☐ Never

24. Are you a member of any farmer group or cooperative? ☐ Yes ☐ No

25. Do you have access to agricultural credit or loans? ☐ Yes ☐ No

26. What is your main source of market information?

☐ Fellow farmers

☐ Traders

☐ Radio

☐ Extension workers

☐ Farmer groups

SECTION E: TECHNICAL FACTORS AFFECTING MARKET PARTICIPATION

27. Do you use improved groundnut seed varieties? ☐ Yes ☐ No

28. Have you received training on improved groundnut production practices? ☐ Yes ☐ No

29. Do you apply fertilizers or soil improvement practices? ☐ Yes ☐ No

30. Do you have access to proper storage facilities for groundnuts? ☐ Yes ☐ No

SECTION F: CHALLENGES FACED IN MARKETING GROUNDNUTS

31. What challenges do you face when selling groundnuts?

☐ Low market prices

☐ Lack of reliable buyers

- ☐ High transport costs
- ☐ Poor road network
- ☐ Lack of market information
- ☐ Lack of storage facilities
- ☐ Lack of capital
- ☐ Household disagreements

Others

32. To what extent do these challenges affect your decision to sell groundnuts?

- ☐ Greatly affect
- ☐ Moderately affect
- ☐ Slightly affect
- ☐ No effect

SECTION G: FARMER SUGGESTIONS

33. In your opinion, what can be done to improve groundnut marketing in your area?

.....

.....

.....

.....

Figure 1: Figure 0 1: study area map

