

YOUTH PARTICIPATION IN THE CASSAVA VALUE CHAIN IN THE UPPER
WEST AKIM DISTRICT, EASTERN REGION, GHANA

BY

EYRAM KWAKU BOESI

(10932959)

**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON
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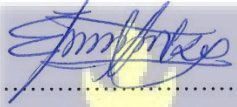
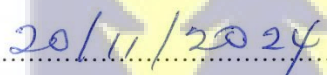
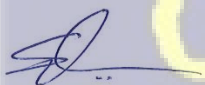
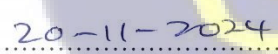
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DECEMBER, 2023

DECLARATION

I, **EYRAM KWAKU BOESI**, the author of this thesis titled **“YOUTH PARTICIPATION IN THE CASSAVA VALUE CHAIN IN THE UPPER WEST AKIM DISTRICT, EASTERN REGION, GHANA”** do hereby declare that except for the references cited, which are duly acknowledged, this thesis is the product of my research work in the Department of Agricultural Economics and Agribusiness, University of Ghana, from January 2022 to November 2023. This thesis has not been published or submitted anywhere, either in part or in whole, for the award of any degree.

	
.....	
EYRAM KWAKU BOESI	
	
.....	
Date	
This thesis has been submitted for examination with our approval as supervisors.	
	
.....	
Prof. Daniel Bruce Sarpong	Dr. Freda Elikplim Asem
(Major Supervisor)	(Co-Supervisor)
	
.....	
Date	Date



DEDICATION

This thesis is first dedicated to the Almighty God. It is also dedicated to my family and friends for their love, care, and support.



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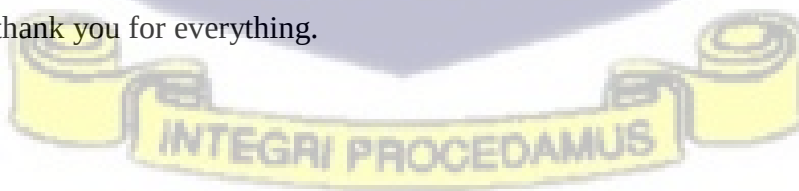
All gratitude and great honor to the almighty God for the favor, guidance, and wisdom He has given me to complete this thesis. I appreciate the Department of Agricultural Economics and Agribusiness, University of Ghana, Legon for offering me the opportunity to pursue my master's degree in Agricultural Economics.

I extend my warmest appreciation to my supervisors, Prof. Bruce Sarpong and Dr. Freda Asem, for their constructive comments and guidance during the research process. I acknowledge the roles played by all the lecturers of the Department of Agricultural Economics and Agribusiness, University of Ghana, Legon, for their immense contributions to the success of this work.

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To those who have contributed in diverse ways but cannot see their names here, I say a very big thank you for everything.



ABSTRACT

The study's main objective is to assess youth's participation in the cassava value chain in the Upper West Akim District. Specifically, to describe the activities involved in the cassava value chain, describe the perceptions of the youth toward the cassava value chain, analyze the proportion of the youth involved in the cassava value chain, and estimate the factors influencing the youth's participation in the cassava value chain. This study employed a combination of purposive and simple random sampling methods, and 284 youth respondents between the ages of 18 and 35 years were interviewed using a structured questionnaire. Data was analyzed using descriptive statistics and a binary logistic regression model. Out of the total sample size, 40 percent of the youth were into cassava production, 32.5 percent were into cassava processing, and 27.5 percent were into cassava marketing. On average, most of the youth (32%) strongly agreed to have been actively engaged in the cassava value chain activities, were interested in improving their knowledge and skills, and planned to be involved more in the chain in the future. The overall perception index of the youth toward the cassava value chain was positive. This index showed that the youth perceived the prospects of the cassava value chain as promising and were ready to explore any innovations to enhance their activities in the value chain. From the logit results, gender (4.53), primary education (2.49), marital status (2.31), perceptions (0.24), credit access (1.78), land access (3.30), and extension access (1.85) positively and significantly influenced participation in cassava production. Gender (-1.77), JHS education (0.59), credit access (0.46), and market access (0.82) significantly influenced participation in cassava processing. Gender (-1.44), household size (0.18), perceptions (0.42), and market access (2.54) significantly influenced youth participation in cassava marketing. The study recommends that modern technologies be made available and accessible to the youth to make activities along the cassava value chain easier. Promote industrialization in the district, specifically, the cassava processing factory. Intensify training of the youth on modern farming practices, value addition, and entrepreneurship. Moreover, making available and accessible to the youth improved cassava varieties, farmlands, credit, markets, and extension services to increase their participation in the cassava value chain.

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LIST OF ACRONYMS

AGRA	Alliance for a Green Revolution in Africa
ASCL	Ayensu Starch Company Limited
CAADP	Comprehensive African Agriculture Development Programme
CEAR	Centre for Econometric & Allied Research
FAO	Food and Agriculture Organisation
FAOSTAT	Food and Agriculture Organisation Statistics
FBO	Farm-Based Organisation
GASIP	Ghana Agricultural Sector Investment Programme
GDP	Gross Domestic Product
GIS	Geographical Information System
GLSS	Ghana Living Standards Survey
GSS	Ghana Statistical Service
GVC	Global Value Chains
GYEEDA	Ghana Youth Employment and Entrepreneurial Development Agency
HQCF	Producing High-Quality Cassava Flour
ICT	Information and Communications Technology
JHS	Junior High School
ILO	International Labour Organization
LPM	Linear Probability Models
MOFA	Ministry of Food and Agriculture
NGO	Non-Governmental Organization
NYDPF	National Youth Development Policy Framework
NYP	National Youth Policy
OLS	Ordinary Least Square
PERD	Planting for Export and Rural Development
PRA	Participatory Rural Appraisal
SDG	Sustainable Development Goal

SSA	Sub-Saharan Africa
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
VCDP	Value Chain Development Program
VIF	Variance Inflation Factor



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Comprehensive African Agriculture Development Programme (CAADP) highlights the need for increased agricultural productivity to achieve food security, poverty reduction, and lower food prices for the poor (Brüntrup, 2011). With Africa's population projected to grow by 40% by 2030, agriculture offers significant career opportunities for young people (Development Bank of Africa, 2016). To make agriculture attractive and profitable for the youth, the sector must address the Sustainable Development Goals (SDGs) of no poverty, zero hunger, and decent work (SDGs 1, 2, and 8).

In Ghana, agriculture contributes over 21% to the GDP, growing at 8.4% in 2021 compared to a 5.4% GDP growth rate overall. It employs 32% of the population, provides livelihoods for 52% of the labor force, and supplies critical raw materials for industry (GSS, 2021). Despite agriculture's importance, the youth unemployment rate remains high at 13.4%, partly due to youth perceptions of agriculture as low-paying, labor-intensive, and lacking prestige (Yami *et al.*, 2019).

Definitions of "youth" vary by organization but are generally in the 15-35 age range (Kidido *et al.*, 2017; African Youth Charter, 2006). This study defines youth as individuals aged 18-35 engaged in agriculture-related activities. With the majority of Africa's population under 25, engaging the youth in agribusiness could stimulate

economic growth and tackle high unemployment. Currently, 12.6% of young people globally are unemployed, with Ghana's youth prioritizing respectable jobs with better benefits (ILO, 2013). Ghana's unemployment rate has recently shown an upward trend, with the latest average reported at 14.7% for the first three quarters of 2023, according to the Ghana Statistical Service. This figure highlights persistent challenges in the labor market, particularly among youth aged 15 to 35 and females (13.8%), who experience higher unemployment rates compared to their male (11.4%) counterparts.

Agriculture employs 36% of Ghana's population, including 50.86% female and 49.14% male youth, with most in rural areas (FAOSTAT, 2022). Youth involvement is vital to sustaining productivity, as they bring physical energy, adaptability, and modern skills to the sector (Naamwintome *et al.*, 2013). Cassava production, in particular, provides numerous job opportunities across the value chain, from cultivation to marketing, that can reduce unemployment, support food security, and offer income generation (Cock & Connor, 2021).

However, only 5% of Ghanaian youth are engaged in agriculture, with 70% expressing no interest in the sector due to barriers like limited access to land and resources, inadequate infrastructure, and high input costs (Heifer International, 2021; Twumasi *et al.*, 2019). Youth-targeted programs lack funding, and limited access to affordable technology discourages involvement in cassava processing and value addition (Adeyanju *et al.*, 2021; Haruna *et al.*, 2019). These challenges are exacerbated by inadequate policies, limited extension services, and slow digital adoption, making agriculture unappealing to youth (Magagula & Tsvakirai, 2020).

An interplay of socio-economic, environmental, and institutional factors further complicates youth participation. Formal employment restricts educational opportunities, limiting access to capital and modern technologies. Climate change and soil degradation exacerbate production costs and low profitability. Inadequate policies and institutional support impede extension services and market access, while the slow adoption of digital tools undermines efficiency and competitiveness.

To address these issues, the Ghanaian government has introduced programs like Planting for Food and Jobs, the Ghana Youth Employment and Entrepreneurial Development Agency (GYEEDA), and the Ghana Agricultural Sector Investment Program (GASIP) (MoFA, 2015). These initiatives, along with investments in agribusiness factories, have expanded job opportunities in various agricultural value chains, helping to improve the image of agriculture (Speth *et al.*, 2015).

This study examines youth engagement in the cassava value chain in Ghana's Upper West Akim District. The district is notable for cassava processing, which supports local economies and attracts traders. The study aims to identify whether factors impacting youth engagement align with previous research findings, providing insights that could guide policies to empower youth through agriculture. This analysis can reveal practical implications for engaging youth in sustainable agricultural development and provide data to develop institutional and infrastructure strategies to empower marginalized youth through agriculture.

1.2 Statement of the Problem

One important area of the agricultural industry is the cassava value chain, which can provide smallholder farmers and other value chain participants with jobs and revenue. A rising number of enterprises are interested in using cassava as a raw material for a variety of industrial processes, such as the manufacturing of ethanol, biofuels, and other goods, because of its low production costs and high starch content (Sharma, 2022). For instance, Guinness Ghana Breweries makes Ruut Extra Premium beer from raw cassava. The Central Region's Ayensu Starch Company Limited, a cassava starch processing business situated in Bawjiase in the Awutu Senya West District, is still having difficulty securing enough raw materials to run its operations at maximum efficiency. As part of the government's flagship programs, the "One District, One Factory" initiative, a Starch Processing Company is also being built at Mepom in the Upper West Akim district, creating opportunities for farmers to boost output and get access to a ready market. Furthermore, the growing demand for gluten-free products has increased the use of cassava flour as a substitute for wheat flour. The demand for cassava-based products is expected to continue to grow, particularly in urban areas where consumers are looking for convenient and healthy snack options (Aidoo & Abdoulaye, 2020).

Cassava by-products also present economic opportunities. Cassava leaves and peels can be used as a source of animal feed, particularly for ruminants, enabling farmers to increase income by selling their cassava by-products. According to Okike *et al.* (2022), the development of cassava-based animal feed products could create a new market for farmers and increase the value of their cassava production. Cassava is a drought-tolerant crop that can be grown in marginal areas, making it an important crop for climate change

adaptation. Amelework *et al.* (2021) asserted that cassava can play an important role in climate change adaptation, particularly in areas that are prone to drought and other climate-related challenges. The promotion of cassava production in these areas could help to improve food security and reduce the vulnerability of farmers to climate change.

There have been significant improvements in the technologies used for cassava processing. These technologies include improved varieties, mechanization, and processing equipment. Improved varieties of cassava have been developed that are high-yielding, disease-resistant, and tolerant to drought and other environmental stresses. Mechanization has also increased the efficiency of cassava processing, reducing post-harvest losses and increasing productivity. Processing equipment, such as grating machines, hydraulic presses, and flash dryers, have also been developed, making cassava processing easier, faster, and more efficient. So, the question that comes to mind is why are the youth in rural communities not taking advantage of these opportunities to engage more in the cassava value chain.

Jirgi *et al.* (2019) evaluated youth engagement in cassava production under the Value Chain Development Program (VCDP) in the Bida Local Government Area of Niger State, Nigeria. The findings indicated that young people's participation was at a moderate level. A different study on youth participation in agriculture entrepreneurship by Akrong and Kotu (2022) found that young Beninese entrepreneurs would generally prefer to work in other economic sectors than agriculture. According to research by Akrong *et al.* (2021), youths are far less likely to engage in agriculture when they have greater access to education and institutional support services like training and credit. This research demonstrates that young people regard the agriculture industry in

underdeveloped nations to be generally unappealing (Glover *et al.*, 2015, Akrong *et al.*, 2020).

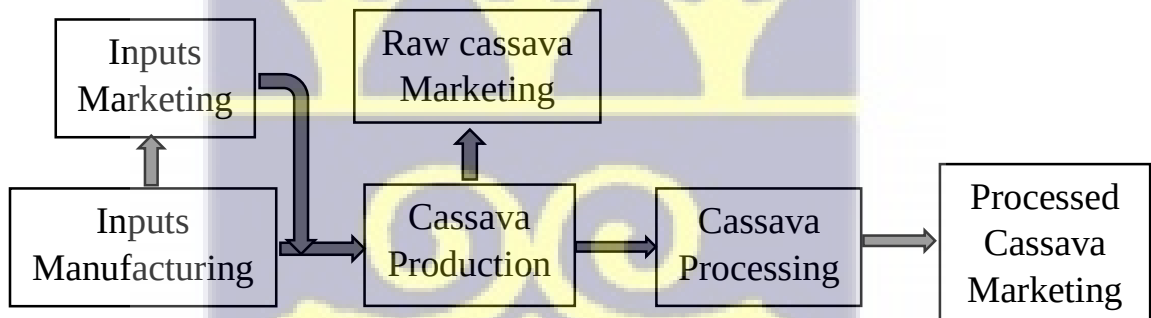
The benefits and drawbacks of youth participation in the cassava value chain were highlighted in other studies. For instance, a study by Okechukwu *et al.* (2014) in Nigeria discovered that youth participation in cassava growing and processing was hampered by a lack of access to land, finance, and market knowledge. Similarly, a study by Ng'atigwa *et al.* (2020) in Tanzania found that limited access to finance, access to land, credits, and markets, and the perception that cassava farming is a low-status occupation were the major constraints to youth participation.

From the preceding paragraphs, youth participation in the cassava value chain is critical for promoting food security, creating employment opportunities, and promoting sustainable agriculture practices. However, the factors that influence youth involvement in this sector vary across different regions and countries. In some areas with cassava industries, young people are actively engaged in the cassava value chain, while in others, their participation is limited or non-existent. Young people are allegedly abandoning farms or expressing a wish to do so, and many of them are opting not to seek careers in agriculture (Bello *et al.*, 2015).

Despite the global insights, there is limited information on drivers of youth choices of different activities in the various cassava value chains as well as the factors influencing their involvement in the various value chains in Ghana. This study addresses this gap by exploring the socio-economic, cultural, and institutional factors influencing youth

participation in cassava production, processing, and marketing in the Upper West Akim District, Eastern Region, Ghana.

Building on previous research (Jirgi *et al.*, 2019; Akrong & Kotu, 2022; Okechukwu *et al.*, 2014; Ng'atigwa *et al.*, 2020), this study provides detailed insights into the drivers of youth choices in the cassava value chain and their level of involvement in its various segments. It emphasizes the interactions between socio-economic, cultural, and institutional factors shaping youth participation. Furthermore, it offers context-specific recommendations for policymakers, stakeholders, and development organizations aiming to promote youth engagement in the cassava value chain in Ghana. The cassava value chain can be shown visually as follows in a diagrammatic display:



Source: Adapted and modified from FAO (2014)

1.3 Research Questions

This research is directed toward finding answers to the questions that follows:

1. What percentage of the youths are involved in the cassava value chain?
2. What kind of activities are involved in the cassava value chain that the youth participate in?

3. What perceptions do youths in the district hold toward the cassava value chain?
4. What are the determinants of youth participation in each of the cassava value chains?

1.4 Objectives of the Study

The study's main objective is to assess youth's participation in the cassava value chain in the Upper West Akim District. Specifically, this study sought the following:

1. analyze the proportion of youth involvement in each cassava value chain.
2. describe the activities involved in each cassava value chain by youth.
3. describe youth perceptions of the cassava value chain.
4. estimate the factors influencing youth participation in each cassava value chain.

1.5 Relevance of the Study

It is crucial to examine how young people view agriculture to offer factual proof that supports or refutes their intention to pursue a career in it. By providing policymakers with guidance, the findings can have a significant impact on the course of policy.

This research intends to contribute to the development of evidence-based agricultural policies by identifying the agricultural activities that resonate with youth. For instance, policy programs like planting for food and jobs.

The findings will help policymakers put plans in place to educate and create awareness about the vast and unlimited opportunities agriculture offers the people, especially the youth. The awareness couples with proper and attractive policy initiatives to arouse the interest of the youth to take advantage of the benefits of participating in agriculture.

The research will additionally aid in the effective execution of government programs aimed at advancing the agricultural industry. The government must work in meaningful partnerships with youth to develop interventions and services that are appropriate for their empowerment. This includes fostering an environment where the youth feel empowered to make contributions to the economic, social, and cultural advancement of themselves, their families, and the country at large.

1.7 Organization of the Study

This study is divided into five chapters. Chapter One constitutes the introduction, and focuses mainly on the background of the study, problem statement, objectives, and the significance of the study. Reviews of the literature on theoretical and empirical investigations connected to this subject are included in the second chapter. The approaches used to answer the research questions, the conceptual and theoretical foundation of this thesis, a brief description of the study area, methods for gathering data, and analytical strategies are all covered in Chapter Three. Chapter four offers a comprehensive analysis of the observed data, and Chapter Five includes a summary of the conclusions, findings, and recommended courses of action.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A review of the literature that is pertinent to this topic is given in this part of the research. The concepts and terms utilized in this study are defined and explained. Literature on the methods and theoretical foundations of the estimation of the variables affecting young people's involvement in the cassava value chain. This chapter also reviews other studies' findings and their empirical applications.

2.2 Youth Participation in Agriculture

Research on youth participation in agriculture reveals both commonalities and variations across different contexts. Akinagbe and Ogundele (2019) found significant youth involvement in crop production (65.6%) and vegetable farming (50.8%), with an overwhelming 98% of participants exhibiting a favorable attitude toward agriculture. Despite this positive outlook, the challenges of initiating small-scale agricultural ventures and the limited income derived from agricultural produce emerged as key barriers. Similarly, Kimaro *et al.* (2015) observed that rural youth preferred investing in their farms over working as laborers, highlighting agriculture's role in meeting socio-economic needs such as food, healthcare, and education. However, the study emphasized that while youth see agriculture as a viable livelihood, systemic support is necessary to maximize its potential.

Nnadi and Akwiwu (2008) investigated the factors influencing youth participation in agricultural activities in Nigeria and found that 84% of the population engaged in tasks

such as clearing, planting, fertilizing, and harvesting. Socio-demographic factors, including age, education, marital status, and household size, were significant determinants of participation. This aligns with findings from Wuni *et al.* (2017), who examined the reasons behind youth unemployment in Ghana's Bawku Municipality. The study attributed the issue to barriers such as limited access to land and financial constraints, rather than a lack of interest in agriculture. Notably, 72% of the youth expressed a willingness to pursue careers in the sector, suggesting that systemic challenges, rather than personal preferences, hinder their active involvement.

Studies diverge on youth enthusiasm, with Akinragbe and Ogundele (2019) reporting 98% favorable attitudes, whereas Wuni *et al.* (2017) found a disconnect between interest and active participation due to systemic barriers. Additionally, there's disagreement on agriculture's economic benefits, with Kimaro *et al.* (2015) emphasizing its role in meeting socioeconomic needs, while Wuni *et al.* (2017) highlight financial limitations and land access issues leading to unemployment. The importance of education and socio-demographic factors also varies across studies. To reconcile these discrepancies, this research adopts a holistic approach, exploring diverse agricultural activities, systemic factors, regional differences, and gender dynamics. By integrating these perspectives, the study aims to bridge the gap between enthusiasm and practical involvement, providing actionable strategies to enhance youth engagement in agriculture.

2.3 Benefits in the Agriculture Industry

Beyond primary production, agriculture is a vital sector for economic growth, employment security, and food security in many nations. With their enthusiasm and

inventiveness, young people can become very influential in this field. The agricultural value chain offers a range of options for youth to participate and contribute meaningfully, spanning from production to processing, distribution, and marketing. Participation of young people in primary agricultural production can increase food security and provide revenue (Ahaibwe *et al.*, 2013; Proctor & Lucchese, 2012).

The next generation needs to know about the increased business and employment opportunities in the value chain industry. Youths can also benefit from agribusiness prospects. These involve farming and supply chain establishing services like processing, wholesaling, and retailing in addition to on-farm production. These agricultural ventures have the potential to produce income and employment opportunities for youth (Yami *et al.*, 2019). For example, it is estimated that by 2030, the food and beverage industry in Africa will bring in over \$1 trillion in revenue and may offer additional opportunities for youth employment (Yami *et al.*, 2019).

Other studies highlight youth's potential in this area. Fadeyi (2022) underscores the significance of youth in the production of crops and cattle, showcasing their ability to embrace contemporary farming methods and augment agricultural output. Young entrepreneurs might find a variety of options in the agribusiness sector. A report by FAO (2016) underlines the potential for value addition, such as processing, packaging, and branding of agricultural products. Youth engagement in agribusiness can add value to raw materials, create employment, and contribute to economic growth. Within the agricultural value chain, ICT can be extremely important. Research conducted by Boateng (2012) and Fadeyi (2022) demonstrates how ICT tools such as weather

forecasting, market information systems, and mobile apps help young farmers make more informed decisions that increase their income and production.

For young entrepreneurs, institutions and middlemen offer access to capital, training, and market assistance. Babu *et al.* (2021), addressed the need for strengthening support in these areas for fostering young farmers' capacity-building and participation in the industry and stressed that more has to be done in this regard. Globalization and market expansion present youth with opportunities to participate in agricultural exports. A report by UNCTAD (2020) points out the growth in international trade of agricultural products and how youth can tap into these opportunities by establishing export-oriented enterprises. Capacity building is essential to equip youth with the necessary skills and knowledge. The influence of training programs, vocational schools, and mentorship in improving young people's capacity to effectively engage in the agricultural value chain is highlighted by research conducted by Davis *et al.* (2015). International organizations and governments have acknowledged the significance of youth in agriculture. According to Poulton *et al.* (2014), youth involvement and support for agriculture are prioritized by programs like the Comprehensive Africa Agriculture Development Programme (CAADP) of the African Union. It is crucial to acknowledge the challenges youth may face in the agricultural value chain, including land tenure issues, access to resources, and market uncertainties. Addressing these challenges is essential to maximize the opportunities available.

2.4 Limitations on the Involvement of Youth in Agribusiness

Youth disinterest in agribusiness is influenced by both “push and pull” factors, as highlighted by several studies. Sumberg *et al.* (2012) emphasize that improved access

to education and urban employment opportunities are key pull factors drawing young people away from agriculture. On the other hand, Proctor and Lucchese (2012) and Njoku (1999) focus on push factors such as limited access to land, outdated farming equipment, inadequate rural infrastructure, and insufficient funding. This divergence in emphasis suggests that effective solutions must address both the appeal of urban opportunities and the structural issues plaguing rural agricultural systems.

A significant barrier to youth participation in agriculture is limited access to critical resources, as noted by Noorani (2015) and Leavy and Smith (2010). They argue that ensuring access to land, finances, and infrastructure is essential for increasing youth engagement. Trevor and Kwenye (2018) expand on this view, identifying additional barriers such as a lack of technical support, inadequate road networks, poor storage facilities, and the absence of agricultural insurance. This broader perspective highlights the need for systemic changes, extending beyond basic resource provision to include policy support and institutional capacity-building.

Youth perceptions of agriculture also play a crucial role. Kimaro *et al.* (2015) and Chikezie *et al.* (2012) both agree that poor economic returns and rural poverty dissuade youth from pursuing careers in agriculture. However, while Kimaro *et al.* attribute this to systemic inefficiencies, Chikezie *et al.* argue that youth often lack awareness of agribusiness opportunities. This discrepancy suggests that improving the sector's performance must be paired with targeted communication strategies to reshape youth perceptions and highlight the potential of agribusiness.

Most studies generalize the challenges faced by youth without addressing regional and cultural variations. For instance, land access challenges may differ significantly

between urban peripheries and rural areas. Additionally, there is a limited exploration of how youth aspirations and perceptions can be reshaped to align with agribusiness opportunities. Few studies also consider how modern technological innovations, such as precision farming or digital platforms, might mitigate systemic challenges and attract young people to agriculture.

The current study aims to provide a context-specific analysis of the challenges and opportunities for youth in agribusiness across different socio-economic settings. It will incorporate data on youth perceptions to better understand how these align with the realities of agribusiness. Additionally, the study will explore the role of emerging technologies and innovative practices in overcoming barriers and creating new opportunities. Assessing existing policies and their implementation will also offer actionable recommendations to enhance youth participation in agriculture.

2.5 Cassava Value Chain

The value chain refers to a sequence of activities a business undertakes to provide a product or service, where value is added at each step, enhancing its competitive edge in the market (De Marchi *et al.*, 2018; Gereffi, 2019). This process aims to improve the quality of the product while considering the opportunity cost of the new procedures involved (Lee *et al.*, 2018). Value chain analysis helps businesses identify areas for improvement, supports decision-making, and provides a competitive advantage by examining the distribution of rewards, the role of upgrading, and the governance dynamics within the chain (Kaplinsky & Morris, 2000).

Several studies have examined cassava value chains across different regions, focusing on various stages like production, processing, and distribution. Koomson *et al.* (2020) analyzed the cassava value chain in Ghana, identifying multiple routes from farm to consumer and pointing out the challenges of upgrading due to inconsistent grading and weighing techniques. Kimathi *et al.* (2007) studied cassava flour value chains in Kenya and Uganda and found significant potential in cassava chips for animal feed, though limited organizational capacity and inadequate policy frameworks hindered technological adoption. Asiedu (2009) focused on technological barriers in West and Central Africa, such as limited access to quality seed, machinery, and fertilizer, as well as the effects of climate change. Kleih *et al.* (2013) explored the demand for high-quality cassava flour (HQCF) in Ghana and identified the need for standardized processing, especially for the food and non-food industries. Njukwe *et al.* (2014) highlighted the importance of stakeholder partnerships in Cameroon to enhance cassava production and consumption, underscoring the need for innovative processing techniques. In Nigeria, Hadiza (2012) found that poor infrastructure, financial constraints, and subpar machinery hindered cassava production in Kaduna State.

Koomson *et al.* (2020) and Hadiza (2012) provided detailed mappings of cassava value chains in their respective regions, but Koomson's study was more comprehensive, covering all stages from production to consumption. In contrast, Njukwe *et al.* (2014) and Kimathi *et al.* (2007) focused more on specific stages such as processing and market integration. Both Asiedu (2009) and Kimathi *et al.* (2007) emphasized technological constraints, but they differed in their focus on policy interventions. While Asiedu

stressed the lack of quality seeds and fertilizers, Kimathi pointed to the absence of clear guidelines for value-added technologies in the public sector.

While Kleih *et al.* (2013) and Koomson *et al.* (2020) identified strong market demand for high-quality cassava products, they also pointed out challenges related to upgrading, particularly due to the lack of standardization across the value chain. Asiedu (2009) and Hadiza (2012) highlighted gender-related barriers, with Asiedu noting the difficulties faced by women processors in accessing resources, while Hadiza focused on financial and infrastructural challenges.

There are also conflicting findings in the literature. Studies like those of Kimathi *et al.* (2007) and Asiedu (2009) highlight significant technological constraints as major obstacles to improving the cassava value chain. However, research by Kleih *et al.* (2013) and Koomson *et al.* (2020) suggests that despite these challenges, there is a growing market demand for cassava products, particularly HQCF, indicating a disconnect between market opportunities and technological capabilities. Moreover, while some studies emphasize the need for stronger governance and policy frameworks (Kimathi *et al.*, 2007; Asiedu, 2009), others advocate for collaborative approaches through partnerships and stakeholder engagement (Koomson *et al.*, 2020; Njukwe *et al.*, 2014).

The current study seeks to provide a comprehensive analysis of the cassava value chain, with a focus on both market demand and technological constraints. Unlike previous studies, which often focused on specific segments, this study will evaluate the entire value chain, from production to consumption, and assess the role of governance in improving value chain efficiency. It will also examine the socioeconomic and gender-

related barriers that impact value chain development, particularly for smallholders and processors. The study aims to offer policy recommendations to enhance access to resources, infrastructure, and finance, thereby facilitating value chain upgrading and improving overall performance in the cassava sector.

2.6 The Activities Involved in the Cassava Value Chain

The Participatory Rural Appraisal (PRA) technique describes the activities that are part of the cassava value chain. This approach entails identifying and analyzing the activities involved in each stage of the value chain by collaborating with stakeholders at those stages. Additionally, the PRA technique aids in identifying possibilities and problems facing the cassava value chain and in the development of solutions (Kalyesubula & Oonyu, 2019). Numerous tasks are involved in the cassava value chain, such as distribution, marketing, processing, and production.

2.6.1 Production

Cassava farmers predominantly operate in rural areas characterized by inadequate infrastructure, according to Antwi-Boateng (2020) and Adebayo *et al.* (2020). These rural areas lack sufficient infrastructure, posing significant challenges for farmers. As a result, they are often forced to sell their cassava in its fresh form. The amount sold depends on the size of their cassava fields, the amount harvested, and the food requirements of their households. They typically sell most of their harvested cassava roots at the farm gate or village markets to small traders or retailers. These farmers usually obtain planting material from their farms or their neighbors, and they typically

weed their fields manually using hoes. Cassava production involves land preparation, planting, weeding, fertilizer application, pest and disease control, and harvesting. Farmers typically use traditional methods, such as manual labor and hand tools, to cultivate cassava. Land preparation is the first step in cassava farming. This involves clearing the land of weeds, stumps, and other debris, and then tilling or plowing the soil. This can be done manually or with machinery depending on the scale of the farm. Planting is done after land preparation, cassava stems are planted in furrows or ridges. The stems are usually cut into 20-30 cm long pieces with at least two buds per piece. Weeding is required to control the growth of weeds that compete with cassava for nutrients and water. Depending on the size of the farm, herbicides or manual labor might be used to control weeds. Applying fertilizer is also necessary to enhance soil fertility and raise yield. The kind and quantity of fertilizer needed depend on the kind of soil and the nutrient requirement of the cassava variety. Cassava farming is prone to pests and diseases that can significantly reduce yield. Common pests include cassava mealybug and cassava green mite, while common diseases include cassava mosaic disease and cassava brown streak disease. Cassava is usually harvested after 8-18 months, depending on the variety and the intended use of the crop. Harvesting involves uprooting the cassava stems and removing the tubers from the ground.

2.6.2 Processing

For home consumption, traditional methods of cassava processing are primarily performed by women at the household level. Cassava processing involves the conversion of raw cassava roots into a range of value-added products, including gari, fufu, cassava flour, chips, and starch. Processing activities involve peeling, washing,

grating, pressing, fermentation, drying, milling, and packaging (Okuneye & Olagunju, 2020; Adebayo *et al.*, 2021). Peeling and washing are important steps in cassava processing, as they remove the outer skin and dirt from the roots, which can affect the quality of the final product. Grating is another crucial step that involves breaking down the cassava into small pieces using manual or motorized graters to facilitate further processing. Pressing is another important step that involves squeezing out the water from the cassava mash. This step is critical in producing high-quality cassava products such as fufu, gari, and cassava flour. Fermentation is a critical step in cassava processing, as it helps to reduce the cyanide content and improve the flavor and texture of the final product. Fermentation can occur naturally or be induced by adding starter cultures. Drying is an important step in cassava processing, as it helps to extend the shelf life of the final product and reduce the risk of spoilage. Milling and packaging is the final step in cassava processing. Milling involves grinding the dried cassava into flour. This flour can be used as a raw material in the production of a range of cassava-based products, including bread, biscuits, and snacks. Several studies have reported the use of traditional or modern milling techniques for cassava processing. Packaging is done to protect processed products and make them more marketable (Adesina *et al.*, 2016; Marfo *et al.*, 2018).

2.6.3 Marketing

Marketers of cassava and its associated goods include retailers and wholesalers. Retailers, who are typically found closer to their communities, are crucial in collecting cassava at collection points and transporting it in convenient small quantities to final customers or wholesalers. They purchase raw roots and other shelf-stable cassava

goods, such as chips and flour, and then they rent cars to deliver them to the village or city markets and along the sides of the road. The wholesalers employ cars to deliver the roots to the cities after purchasing from several stores and occasionally straight from the producers. Marketing activities play a critical role in the success of cassava value chains. The marketing activities involved in cassava value chains can be categorized into four main areas: production, processing, distribution, and consumption. Production marketing activities involve the promotion of cassava production through the provision of inputs such as improved varieties, fertilizers, and pest control measures. These activities are essential for improving the quality and quantity of cassava produced. Processing marketing activities involve the transformation of cassava into various products, including flour, starch, and ethanol. These activities are essential for adding value to cassava and increasing its marketability. Distribution marketing activities involve the movement of cassava and its products from the production and processing sites to the markets. These activities are necessary for ensuring that cassava and its products are available to consumers at the right time and places. Consumption marketing activities involve the promotion of cassava and its products to consumers. These activities are essential for creating awareness of the nutritional benefits of cassava and its products (Ogunsina, 2015; Fakayode & Bamire, 2015).

2.7 Youth Participation in the Cassava Value Chain

The involvement of youth in the cassava value chain has been the subject of several studies, which explore their participation in production, processing, and marketing. Muhammad *et al.* (2020) conducted a study in Kwara State, Nigeria, and found that the majority of youth involved in cassava production were under 30, with a mean age of 25

years. Similarly, Akinwumi *et al.* (2018) reported that most cassava farmers in Nigeria were between the ages of 18 and 35. Baidu-Forson *et al.* (2015) found that 48% of cassava farmers in Ghana were under 35 years old, indicating significant youth involvement across West Africa. Afolabi *et al.* (2018) also reported that 51.3% of respondents were below the age of 35, highlighting the important role of youth in cassava production and processing in Nigeria. Ezedinma *et al.* (2020) confirmed that 60% of cassava farmers in Nigeria were under 35 years old, underscoring the prominence of youth in the sector.

Despite the high participation rate, challenges remain. Afolabi *et al.* (2018) noted that youth face barriers such as limited access to finance, technical skills, and poor market linkages, which hinder their full engagement in cassava value chain activities. Furthermore, studies by Chikezie *et al.* (2012) and Adepoju and Adegbite (2019) found that while youth were involved in cassava farming, their participation was mainly limited to labor on the farm, without involvement in processing or marketing. These findings highlight the need for greater opportunities for youth to engage in other facets of the value chain, such as processing and marketing, through training and financial support.

Youth involvement in cassava processing is also critical to the value chain. Akrong and Kotu (2022) and Okechukwu *et al.* (2019) found that young people are actively engaged in tasks like peeling, grating, and frying cassava, as well as producing high-value products like starch and flour. However, their participation is largely restricted to small-scale, manual operations, with limited access to training, technology, and financial

resources. The studies recommend enhanced efforts to transition youth from traditional practices to more automated and efficient processing methods, alongside capacity-building initiatives, technological innovations, and promoting entrepreneurship.

In cassava marketing, Nweke *et al.* (2017) found that young people were involved in activities such as transportation, storage, and selling, with many utilizing modern marketing techniques like mobile phones and social media. Olaomo and Molnar (2022) also explored gender roles in cassava marketing and processing in Nigeria, revealing that while more men were involved in processing, women dominated the marketing phase. Their study found that about 29% of the youth involved in processing and marketing were under 40 years old. The study recommended that youth be trained in both processing and marketing skills to facilitate their participation in formal, more profitable sectors of the cassava value chain.

Across these studies, there is a consensus that youth involvement in cassava production is high, with a particular focus on those aged 18 to 35. However, their participation tends to be confined to farm labor or manual, small-scale processing activities, which limits their potential to fully capitalize on the value chain. While studies like Afolabi *et al.* (2018) and Chikezie *et al.* (2012) identify significant barriers, such as poor access to finance, technical skills, and market linkages, Akrong and Kotu (2022) and Okechukwu *et al.* (2019) stress the need for more automated processing techniques and capacity building. There is a clear need for initiatives that go beyond simply engaging youth in production to include formal processing and marketing skills, which would open up additional avenues for youth to participate in the value chain.

Studies lack a comprehensive focus on gender and the intersectionality of youth involvement across different roles in the cassava value chain. While Olaomo and Molnar (2022) examined gender dynamics in marketing and processing, there is little discussion of how gender-specific challenges might affect youth participation in cassava processing and marketing. Additionally, while most studies emphasize the barriers faced by youth, they often do not explore the effectiveness of existing government policies or initiatives aimed at empowering youth in these sectors.

The current study seeks to address these gaps by providing a comprehensive analysis of youth involvement in the entire cassava value chain, production, processing, and marketing. Unlike previous studies that focus separately on each segment, this study will examine how youth can be better integrated across all phases of the value chain, with a particular focus on overcoming the financial, technological, and market-related barriers identified in the literature. It will also explore the gender dynamics in youth participation, particularly in processing and marketing, to assess how gender roles and inequalities may limit youth engagement and how they can be addressed.

2.8 Perception of the Youth on the Cassava Value Chain

2.8.1 Perceptions of Youth on Cassava Production

Several studies have investigated the perceptions of youth on cassava cultivation in Africa. A study by Muhammed *et al.* (2020) in Nigeria found that youth perceive cassava cultivation as profitable and an important source of income, with high market demand for cassava products. The youth also agreed that cassava production improves their livelihood. The researchers also found that improved planting materials and

various agricultural programs will encourage rural youth participation in cassava production. Similar work done by August (2020) found that youth perceive cassava cultivation as a means of achieving financial independence and reducing poverty and that youth were motivated to engage in cassava cultivation because of the high yields and low input costs associated with the crop. The study also found that youth were attracted to the flexibility of cassava cultivation, as it can be grown on both small and large scales.

In Ghana, a study by Darko-Koomson *et al.* (2020) found that youth perceive cassava cultivation as a means of improving food security and generating income. The study found that youth were attracted to cassava cultivation because of the high yields and resistance to pests and diseases. The study also found that youth were motivated to engage in cassava cultivation because of the high demand for cassava products in local and international markets. Njiraini *et al.* (2021) in Kenya found that youth perceive cassava cultivation as a means of creating employment opportunities and reducing poverty. The study found that youth were attracted to cassava cultivation because of the low input costs and high market demand for cassava products., the youth were motivated to engage in cassava cultivation because of the potential to earn income from both the sale of cassava products and the provision of labor for cassava processing.

One of the main reasons why the youth view cassava production negatively is its perceived lack of profitability. A study by Oladele *et al.* (2021) in Nigeria found that young people viewed cassava farming as a less prestigious occupation compared to other agricultural activities like poultry farming and vegetable production. The youth often view cassava production as a traditional and outdated agricultural activity that

lacks innovation and modernization. Henning *et al.* (2022) and August (2020) found that young people perceive cassava farming as a low-tech activity that offers little opportunity for technological innovation and creativity, making cassava farming less attractive to young people interested in modern and innovative agricultural practices.

Cassava farming is a labor-intensive time-consuming activity that requires significant physical effort. Many young people view cassava production as a difficult task that offers little reward for their labor. For example, a study by Chisanga *et al.* (2019) in Zambia found that young people hesitated to engage in cassava farming due to the heavy labor required and the long time it takes to harvest and process the crop. The youth prefer less physically demanding jobs, such as office work or trading, to cassava cultivation (Ogunlade *et al.*, 2020).

2.8.2 Perceptions of the Youth on Cassava Processing

Adebayo *et al.* (2020) conducted a study in Nigeria to assess the perceptions of youth toward cassava processing. The study found that the majority of youth (82.2%) had a positive perception of cassava processing as a source of income generation. They identified the need for training and access to finance as critical factors for successful cassava processing ventures. According to a study by Afolabi, *et al.* (2010), young people in Nigeria perceive cassava processing as a low-value and low-prestige activity, with limited potential for income generation. The study found that young people are often more interested in pursuing careers in the formal sector, such as banking or IT, rather than in agriculture or food processing. Another study by Magagula *et al.* (2020) in South Africa found that young people perceive cassava processing as a dirty and

physically demanding activity that is not suitable for women. This negative perception, coupled with a lack of modern processing technologies, has led to a decline in the cassava processing industry in the country. Similarly, a study by Afolayan *et al.* (2017) in Nigeria found that young people negatively perceive cassava processing due to the lack of modern processing technologies, poor working conditions, and low profitability. The study recommended the use of modern processing technologies, such as high-pressure steamers and flash dryers, to make cassava processing more attractive to young people.

2.8.3 Perceptions of the Youth on Cassava Marketing

Studies by Ephrem *et al.* (2021) and Akinyele *et al.* (2016), found that youth were aware of the potential benefits of engaging in cassava marketing, including the opportunity to earn income, gain skills, and improve their livelihoods. Furthermore, the study found that youth were willing to participate in cassava value chain activities, such as production, processing, and marketing. Murimbika *et al.* (2021) Perceived social norms and agripreneurial intention among youths toward cassava value chain activities in Nigeria. The study found that youth perceived cassava as a profitable crop, and were interested in engaging in cassava value chain activities. However, the study also identified several constraints to youth participation, including limited access to finance, lack of training and technical skills, and inadequate infrastructure.

Amaza *et al.* (2017) assess the awareness and perception of youth towards the cassava value chain in Nigeria. The researchers found that young people positively perceived cassava marketing and saw it as a profitable venture. They also found that lack of access

to finance and inadequate market information were significant challenges that hindered youth participation in the cassava value chain. According to a study by Forson *et al.* (2018), youth perceive cassava farming and marketing as profitable and high-paying. Youth also perceive cassava marketing as having unlimited market opportunities, with few opportunities for value addition and product diversification.

Across the studies, there is a recurring theme of youth perceiving cassava farming and marketing as potentially profitable, but this is tempered by significant barriers such as low prestige, high labor demands, and lack of modern technology. While cassava production is generally seen as a reliable source of income, the negative perceptions about its labor-intensive nature and the low-tech aspects of cassava processing create a disincentive for youth to pursue it as a long-term career. This is in contrast to other sectors like poultry farming or vegetable production, which are often seen as more prestigious and less physically demanding. These findings suggest that while youth recognize the economic benefits of cassava, they are deterred by perceptions of it as an outdated and less innovative field.

This study aims to provide a more holistic view of the youth's perceptions across all aspects of the cassava value chain, production, processing, and marketing. Unlike previous studies that focus on one or two segments, this study will assess how youth view cassava as a whole and explore the interconnectedness of their perceptions in relation to the entire value chain. By providing a comprehensive analysis, the study aims to identify more targeted interventions, such as training programs, access to finance,

and the introduction of modern technologies, to make cassava cultivation and processing more appealing and viable for youth.

2.9 Factors Influencing Youth Participation in the Cassava Value Chain

Academic research has focused on youth involvement in agribusiness and agriculture. Withanage (2019) examined the elements influencing young people in Sri Lanka who are interested in starting their agriculture businesses. The estimated binary logistic model revealed that, while parental education had a negative impact, attitude, acceptance, parental satisfaction with agricultural income, parental income, ownership of agro-machines, land, expected government support, and credit facilities strongly positively influenced the aspirations of young people towards agricultural entrepreneurship. The study suggests several strategies, including successful awareness-raising campaigns to change the attitudes of parents and society at large, skillfully crafted training and knowledge-enhancing programs to explain the opportunities that earn trust, and addressing the challenges the industry faces in terms of technological advancements; marketing and seeking out international opportunities; forming successful organizations for young farmers and enabling them to gain the necessary bargaining power; and providing essential facilities like irrigation and water conservation systems, local seed banks, and so on.

The binary logit model was employed by Nwibo *et al.* (2016) to evaluate the factors influencing agribusiness in rural households located in the Ishielu Local Government Area of Ebonyi State. The study discovered that the decision to engage in agriculture

was positively influenced by experience, annual income, household size, and educational attainment, whereas age had a negative correlation with this decision. The variables to be included in the econometric model were determined using the information from this investigation. This analysis, however, did not take into account the various agribusiness endeavors. The various agribusiness endeavors that rural youths engage in were taken into account in the current study.

Using probit regression analysis, Jirgi *et al.* (2019) evaluated youths' involvement in cassava cultivation under the value chain development program (VCDP) in the Bida Local Government Area of Niger State, Nigeria. According to the data, the majority of the farmers in the research area were married men with an average age of 32 years and a household size of six (6) members. They also had low levels of formal education. Age, gender, education level, marital status, household size, kind of farming, and cooperative membership all had an impact on the moderate level of youth participation under the VCDP.

Ogunmodede *et al.* (2020) estimated the factors impacting Nigerian youth's decision to pursue agriculture as a means of employment using a binary logit model. The study concluded that while education and employment decreased the likelihood of engaging in agribusiness, age and years of experience positively influenced adolescents to take advantage of employment possibilities along the agricultural value chain. The current study on the need to model young people's decision to become agricultural entrepreneurs was informed by this one. This study did not, however, specifically look at the selection of agricultural activities.

Magagula and Tsvakirai (2020) looked into the variables influencing young people's intentions to engage in agribusiness in South Africa. The study's conclusions showed that while marital status had a negative impact on a young person's intention to pursue agriculture, parental financial support, engaging in agricultural studies in school, and the perceived economic benefits of agriculture all positively influenced youths' intentions to pursue agribusiness. This study offers information on the factors that influence a youth's willingness to participate in agribusiness, even though it does not address the factors that influence the decision to engage in agriculture.

Ng'atigwa *et al.* (2020) examined youth involvement in Tanzanian horticulture and agribusiness using the ordered logit model. Youth engagement in horticulture agribusiness was positively influenced by education, innovative management, financial availability, a favorable impression of horticulture for agribusiness, and better packaging materials, according to the study. However, youth involvement in Tanzanian horticulture agribusiness was significantly impacted by gender and land size. This study did not take into account the various facets of horticulture and agribusiness (farming and trading). The current study, however, takes into account the various agricultural operations because they result in varying degrees of benefit (profit).

Twumasi *et al.* (2019) evaluated the factors influencing participation and the intensity of tertiary youth participation in agriculture in Ghana by using the twofold hurdle model. The findings showed that young participation in agriculture was influenced by perceived input costs, credit availability, land availability, educational opportunities, and agricultural studies. Conversely, the perceived cost of agricultural inputs and being a man decreased the level of participation. Other factors that affected the level of

participation were youth course of study, loan availability, land accessibility, and the perceived benefits of agriculture. The present investigation of the sequential decisions made by young entrepreneurs along the cassava value chain was inspired by this earlier study. As compared to Twumasi *et al.* (2019), the current study expanded the idea of youth involvement decisions to encompass the cassava value chain.

Adeyanju *et al.* (2021) employed the endogenous switching probit model to examine the effect of agricultural programs on youth participation in agribusiness. They discovered that while formal employment had a negative influence on youth participation in agricultural programs, age, education, migration status, perception of training, and mental health had a positive impact. Conversely, the findings indicate that wealth, gender, and loan availability all had a positive impact on agricultural participation, whereas mental health and education had the opposite effect. This study provided insight into the current study's hypothesis by demonstrating how the previously listed factors affect young people's involvement in agribusiness. This study, however, does not go so far as to demonstrate how these variables affect various agribusiness activities.

Furthermore, Nnadi and Akwiwu (2008) examined the factors influencing young involvement in rural agriculture in Imo State, Nigeria, using a logistic regression model. Their empirical findings showed that juvenile participation in agribusiness activities was significantly influenced by age, marital status, education, household size, parents' occupation, parents' farm income, and dependent status. Similar to this, Akpan *et al.* (2015) used the logistic model to study the factors influencing rural youth's decisions and involvement in agricultural production in Nigeria. The findings showed that youth's

decision to participate in agricultural activities in the study area was positively influenced by their years of involvement in social organizations, their access to ICT (information and communications technology), their type of land ownership, and their availability to state-owned agricultural programs. A study of current empirical research on young people's decisions in agriculture has demonstrated that a variety of factors, varying in terms of socioeconomic, political, and geographic context, affect young people's decisions to participate in agribusiness.

While existing literature provides valuable insights into youth participation in agriculture, the current study will offer a more specific and comprehensive analysis of how various factors interact to influence youth decisions within the cassava value chain. By focusing on specific barriers like access to land, technology, and finance, and exploring how these factors can be integrated into tailored interventions, the study aims to address significant gaps in the literature and propose actionable solutions for increasing youth participation in agribusiness.

2.10 Innovations in the Cassava Values Chain to Attract the Youth

The development of disease-resistant cassava varieties has revolutionized the crop's potential, significantly boosting yields and resilience against devastating diseases like Cassava Mosaic Disease (CMD) and Cassava Brown Streak Disease (CBSD). Through initiatives like the Next-Gen Cassava project, researchers have successfully bred varieties that reduce yield losses by up to 40% and increase yields to 30 tons per hectare, addressing food security concerns and enhancing income potential for smallholder farmers. Furthermore, cassava bio-fortification has led to vitamin A-enriched varieties,

such as yellow cassava, which provide essential nutritional benefits, particularly in regions facing nutrient deficiencies. Promoted by Harvest-Plus in West Africa, these bio-fortified varieties have gained traction in countries like Nigeria and Ghana, offering a sustainable solution to improve nutrition and food security.

Innovations in planting and harvesting equipment have eased labor demands, making cassava farming less labor-intensive. Mechanical planters and harvesters, developed through collaborations with local manufacturers and research institutions, increase efficiency in planting and harvesting, leading to reduced costs and improved yields (Sanni *et al.*, 2018). Post-harvest processing technologies have seen notable improvements, with solar dryers and small-scale milling machines introduced to reduce post-harvest losses. Improved cassava processing equipment enhances farmers' ability to process cassava into high-quality products like flour and starch, thus increasing market value (Tewe & Lutaladio, 2019).

Digital platforms, such as FarmCrowdy and AgroMall in Nigeria, revolutionize cassava farming by directly connecting farmers to markets, eliminating intermediaries, and securing higher prices. These platforms also provide vital data on market trends, weather, and best practices, empowering farmers to make informed decisions. Furthermore, blockchain technology is enhancing transparency and traceability in cassava value chains across Southeast Asia and sub-Saharan Africa, building trust and competitiveness in markets prioritizing sustainable sourcing.

Recent investments in cassava-based ethanol production have created new revenue streams for cassava farmers, particularly in Asia. Ethanol derived from cassava has

applications as a renewable fuel source, offering economic and environmental benefits (Peng *et al.*, 2021). High-quality Cassava Flour (HQCF) has emerged as a viable alternative to wheat flour, especially in Nigeria, where it reduces the cost of imported wheat and supports local farmers. Literature suggests that HQCF adoption has increased significantly in West Africa due to policies encouraging cassava's inclusion in bread flour (Ogundari *et al.*, 2021).

The cassava value chain in Ghana is undergoing significant transformations, driven by innovations in disease-resistant varieties, mechanization, post-harvest processing, market linkages, and value addition. These advancements have the potential to attract youth to cassava farming, addressing concerns about food security, income generation, and environmental sustainability.

2.11 Agricultural Policy Changes Affecting Youth Participation

Efforts to involve youth in agriculture face persistent barriers, such as limited access to land, finance, and training. Recognizing this, policy reforms in developing regions increasingly target these areas, with a strong emphasis on youth empowerment in the agricultural sector. Limited access to financing has been a key barrier to youth in agriculture. The ENABLE Youth program, funded by the African Development Bank (AfDB), provides training and loans specifically for young in agriculture. According to Ayinde *et al.* (2019), the program has significantly reduced youth unemployment and encouraged agricultural entrepreneurship. Secure land rights are critical for youth in agriculture, yet youth often face significant land access issues. Recent reforms in Kenya and Ghana have introduced incentives for land leasing and ownership transfers within families, enhancing youth access to arable land (Mabaya & Christy, 2021).

Programs focused on training young agripreneurs have gained traction. For instance, the African Agribusiness Incubator Network (AAIN) provides hands-on training for youth in agribusiness management, crop processing, and marketing, increasing the appeal of agriculture as a viable career (Njeru & Kebede, 2020). Digital platforms like Precision Agriculture for Development (PAD) have modernized extension services by providing timely advice via mobile devices. These services deliver essential information on best practices and pest control directly to farmers, making agriculture more data-driven and appealing to younger generations (Fuentes & Alvarez, 2021).

Digital platforms like Trotro Tractor (Ghana) and DigiFarm (Kenya) bridge resource gaps for young farmers, offering on-demand access to equipment and labor services, and boosting efficiency. Social media (Facebook, Instagram, WhatsApp) enables knowledge sharing, networking, and market connectivity among young farmers. Climate-smart agriculture initiatives promote sustainable practices, enhanced by policies incentivizing agroforestry, water conservation, and climate-resilient inputs. Governments in Ethiopia and Nigeria provide subsidies for climate-resilient seeds and organic fertilizers, making sustainable agriculture affordable and appealing to youth. Research shows these efforts increase youth engagement in sustainable agriculture.

Youth-focused incubators and accelerators support innovation within the agricultural sector. Programs like Nigeria's Agri-Hub provide young entrepreneurs with funding, mentorship, and networks, promoting the use of technology to address agricultural challenges (Mugambiwa & Tirivangasi, 2020). Tax incentives reduce the financial burden on agritech startups, encouraging innovation. In Kenya, youth agritech companies benefit from tax exemptions, making it easier to start and sustain technology-

driven ventures that enhance agricultural efficiency and productivity (Ogotu & Oino, 2021).

Ghana has made significant strides in promoting youth participation in agriculture through policy reforms. Initiatives like the ENABLE Youth program, African Agribusiness Incubator Network (AAIN), and digital platforms (e.g., Precision Agriculture for Development, Trotro Tractor) address barriers to youth engagement, including limited access to finance, land, training, and resources. Policy reforms, such as land leasing incentives and subsidies for climate-resilient practices, enhance youth access to arable land and encourage sustainable farming. Social media platforms facilitate knowledge sharing and market access, while youth-focused incubators and accelerators (e.g., AgriHub) promote innovation and entrepreneurship. Tax incentives for agritech startups further encourage innovation.

2.12 Factors Influencing Participation of the Youth in the Cassava Value Chain Explained

Land access

Young people seeking to find a way to support themselves through farming in their homelands need access to land. A major requirement for starting a farming operation is obtaining land. This may provide most households with steady access to healthful, high-quality food while also creating jobs and revenue (Kidido *et al.*, 2017). Although having access to fertile land is necessary for farming, getting such land can be extremely difficult for young people (Njenga *et al.*, 2012), particularly in light of the current land tenure systems in many African nations. Land is essential to agriculture, and young people are routinely denied access to arable and productive land. This essentially deters

people from participating in the industry (Afande *et al.*, 2015). One socioeconomic element that influences and deters young people from participating in agriculture is limited access to land (Divyakirti, 2015). Youths now face more obstacles in their quest for agricultural land and possibilities, according to White (2012), especially in a society where elderly persons are expected to occupy leadership roles. Many young people who are deprived of the chance to utilize or own family land have chosen to leave family farms in search of other employment opportunities, or take jobs as laborers or sharecrop tenants abroad (Amanor, 2008). Bezu and Holden's (2014) study in Southern Ethiopia found that young people would prefer to work in non-agricultural fields over agriculture due to restricted access to land. Ghana's youth have suffered greatly from a lack of access to land; as a result, the majority of them have given up on agriculture in favor of other means of income (Kidido *et al.*, 2017).

Infrastructure Access

Africa's rural communities are recognized to encounter significant issues related to physical and social infrastructure, which are pushing the younger generation into urban areas (Afande *et al.*, 2015). Mugisha and Nkwasi (2014) contended that providing rural communities with resources such as dependable energy, improved roads, amusing amenities, internet, high-quality basic healthcare, water, and sanitation will be crucial to empowering young people to engage in agriculture. Furthermore, the majority of young people find it challenging to access information due to the poor agricultural information infrastructure. The majority of young people have a one-dimensional impression of the industry since they are unaware of the opportunities that are accessible to them.

Market Access

Market access gives farmers the ability to procure agricultural services and inputs, as well as the know-how to deliver the finished product to customers. Farmers have the chance to make money in markets, which helps to lower poverty in developing nations (Van Schalkwyk *et al.*, 2012). However, several obstacles prevent most African smallholder farmers from having access to markets, which is crucial for ensuring that farming provides a sustainable source of income. Among these difficulties include strained relationships between different parties, marked by a high degree of mistrust, and low faith in smallholders' ability to satisfy market demands for output volumes and quality (Chipfupa & Wale, 2018). Physical distance to the market is difficult for young farmers who must travel a great distance to get to the market, particularly if they lack access to transportation (Zamxaka, 2015). Given the significance of rural youth for the agricultural sector's future, leveraging their market access is essential to raising incomes, and productivity, and lowering future rates of hunger and poverty. However, the youth in developing nations encounter some obstacles in their quest for market access that surpass those encountered by smallholder farmers (FAO, 2012). FAO (2012) reports that most youth do not have the skills and knowledge necessary for marketing; in addition, they do not have corporate skills and do not know as much about prices as most other smallholder farmers do.

Education and Training Accessible

Youth's negative attitudes towards agriculture can be ascribed to several causes, the most prominent being education (Nxumalo & Oladele, 2013). Most young people still struggle to find information on farming and the farming business, according to Afande

et al. (2015). Many people do not think of agriculture as something that goes beyond basic production, therefore they are not aware of the opportunities the sector presents (FAO, 2014). According to Afolami *et al.* (2012), young people in rural areas have challenges related to both inadequate access to education and the quality of education received. Afolami *et al.* (2012) stated that, even though it should have been taught in elementary schools, the agricultural syllabus vanished from the majority of African schools. It is critical to emphasize that improved agricultural education and training must be provided and that all relevant information must be made available in all significant institutions, including libraries, schools, and municipal offices (FAO, 2014).

Availability of Savings and Credit (Loans)

For many years, scholars in Africa have examined the issue of smallholder farmers' limited access to credit and finance (Brooks *et al.*, 2012). Most young people have difficulty getting financial aid for commitments to agriculture (Gichimu & Njeru, 2014). When they do not provide suitable collateral security, banks and other financial institutions frequently view them as not being creditworthy enough to grant them credit, loans, or other forms of financial assistance (Afande *et al.*, 2015). According to Juma (2017), being able to afford financial resources enables one to pay farm laborers, rent land, and buy agricultural inputs. In a similar vein, Ahaibwe *et al.* (2013) contended that having access to credit, loans, and adequate savings increases the probability that a person will be able to obtain useful resources for agricultural promotion as well as productive inputs. However, due to their inability to repay loans, young people, especially those who reside in rural areas, are reluctant to take out loans (FAO, 2010). When it comes to obtaining loans, young people with creditworthy business ventures

occasionally have an advantage over those without startups or established businesses (McNulty & Nagarajan, 2005). Another crucial source of income for young people is savings since they enable them to accumulate assets, assist during difficult times, and purchase agricultural supplies (McNulty & Nagarajan, 2005).

Extension and Support Service Access

Access to extension and support services is one of the agriculture sector's most important interventions, among other things (Khapayi & Celliers, 2015). Important market information, useful land usage, and agricultural input information are all included in extension and support services (Ahaibwe *et al.*, 2013). In addition to improving young people's agricultural knowledge and expertise, providing these services and support is essential for other important reasons such as rural development, food security commercialization, poverty reduction, and the creation of income for aspiring farmers (Ntshangase, 2016).

2.13 Methods Employed in Related Studies

Empirical research on youth participation in agriculture and agribusiness has predominantly utilized structured questionnaires and interviews for data collection. Studies such as Danso-Abbeam *et al.* (2016), Adewole *et al.* (2020), and Mibey (2016) relied on these methods, employing sampling techniques like simple random sampling and purposive sampling. While simple random sampling, as used by Njeru (2017), ensures equal representation, purposive sampling, as employed by Chipfupa (2017), allows targeted selection but may introduce selection bias. Stratified random sampling, used by Chipfupa (2017) and Zamxaka (2015), adds depth by dividing the population

into strata, such as age groups or income levels, ensuring that diverse perceptions are captured. Recognizing these advantages, the current study adopts simple random sampling and purposive sampling to capture an equal representation of the youth across different stages of the cassava value chain.

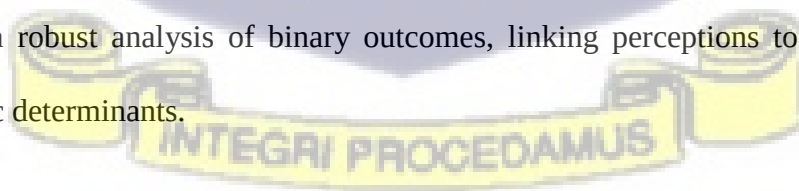
To measure youth perceptions, Kimaro *et al.* (2015) applied a five-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." This approach has been widely used to capture attitudinal data but often oversimplifies complex views by confining responses to predefined categories. Henning *et al.* (2022) took perception analysis a step further by using principal component analysis (PCA) to identify underlying perception dimensions and link them to agribusiness aspirations through a probit model. This provided richer insights into the relationship between perceptions and youth engagement in agriculture. The current study builds on this by developing a perception index that synthesizes Likert-scale responses into a continuous variable. This allows for more nuanced statistical analysis and provides deeper insights into how perceptions influence youth decisions within the cassava value chain.

Statistical models play a pivotal role in these studies. While multiple linear regression models were used by Adesina and Favour (2016) and Zamxaka (2015) to evaluate continuous outcomes, their application to binary outcomes is limited, as they can produce probabilities outside the acceptable range (0–1) and fail to address heteroscedasticity. Binary logistic regression (logit models), favored in studies like Mbah *et al.* (2016) and Cheteani (2016), is better suited for binary outcomes such as youth participation in agribusiness. Probit models, used by Henning *et al.* (2022), offer slightly more flexibility in estimating marginal effects but are computationally more

complex. The current study employs a logit regression model due to its mathematical simplicity and suitability for binary outcomes, such as whether youth choose to engage in cassava agribusiness. By incorporating the perception index and controlling for socioeconomic, demographic, and structural factors, the study bridges the gap between perception-based and decision-based analyses.

Comprehensive frameworks for understanding youth participation in agriculture are also highlighted in prior studies. For instance, Henning *et al.* (2022) incorporated human, social, physical, financial, and natural capital to examine agribusiness involvement but focused on aspirations rather than specific agricultural activities. Similarly, Cheteani (2016) and Yakubu *et al.* (2019) analyzed decision-making in agribusiness but did not link perceptions to structural factors like access to credit or training. The current study combines these approaches by integrating multidimensional factors with the decision-focused framework of logit regression. Additionally, by zeroing in on the cassava value chain, the study addresses the need for specificity in analyzing youth participation at various stages, including production, processing, and marketing.

In conclusion, the current study enhances previous methodologies by constructing a perception index and focusing on the cassava value chain. The use of logit regression ensures a robust analysis of binary outcomes, linking perceptions to structural and economic determinants.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section of the study presents the theoretical and conceptual framework that guides this investigation. The sources of the data, the various methods used to collect the data, the study areas, and the empirical models used in the investigation are all covered in this section. In addition to presenting the necessary hypothesis tests and methods of analyzing each objective, this chapter includes methods for measuring the variables of interest that are part of the empirical models.

3.2 Conceptual Framework

This study's conceptual framework integrates Push-Pull Theory, Theory of Reasoned Action (TRA), and Human Capital Theory (HCT) to examine youth engagement in the cassava value chain. The framework analyzes how youth characteristics, value chain opportunities, and motivational factors (poverty, market opportunities) interact with socio-cultural influences (attitudes, norms) and human capital investments (education, training). This integration enables the identification of key factors influencing youth participation, exploration of relationships between motivational, socio-cultural, and human capital factors, and informed policy decisions supporting youth-led cassava enterprises, ultimately enhancing food security and economic empowerment. The components listed below, as shown in Figure 3.1 on page 44, provide the basis of the conceptual framework for this investigation.

Conceptual Framework

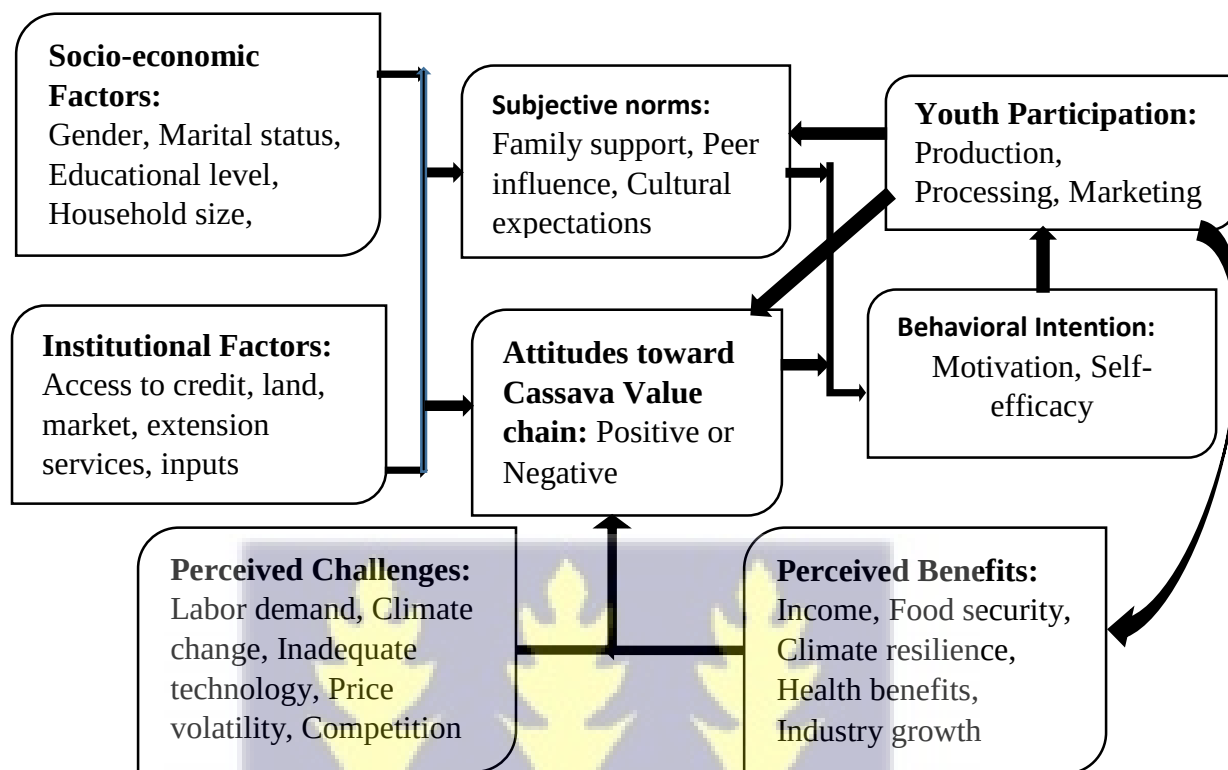


Figure 3.1 Conceptual Framework

Source: Author's construct

This conceptual framework provides a basis for understanding the flow of the factors influencing youth's participation in the cassava value chain. Push-Pull Theory, Theory of Reasoned Action, and Human Capital Theory were considered in constructing the conceptual framework. This theory proposes that an individual's behavior is determined by their intention to perform the behavior, which is influenced by their attitudes and subjective norms. By exploring the roles played by the youth in the cassava value chain, socioeconomic factors, institutional factors, and youth perceptions that exist, policymakers and stakeholders can identify strategies to promote youth participation.

Youth Participation

Youth participation in the cassava value chain is vital for its growth and sustainability. Factors influencing youth engagement in production, processing, and marketing were looked at through the lens of Push-Pull Theory, Theory of Reasoned Action, and Human Capital Theory. Institutional factors, socio-cultural perceptions, and socioeconomic conditions intersect to shape youth participation, with motivational factors, socio-cultural norms, and human capital investments playing critical roles. By understanding these dynamics, this research informs strategies to enhance youth involvement, promote economic empowerment, and ensure food security in the cassava sector. (Nderitu, 2015).

Socioeconomic Factors

This component looks at a few socioeconomic variables that various authors have shown to have an impact on young people's involvement in the cassava value chain. These variables include but are not limited to, marital status, household size, age, education level, experience, and gender. Depending on the sort of study, certain aspects might be significant while others might not be.

Institutional Factors

This component looks at the institutional elements that can affect young people's involvement in the cassava value chain. These factors may include access to new technologies, market linkages, access to credits, farm-based organization membership, extension services, and government policies that support youth involvement in agriculture value chains.

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Perceptions

The framework takes into account the perceived benefits and challenges of the youth toward engaging in activities related to the cassava value chain as a means of subsistence. This study identifies that youth perceptions play a significant role in determining the youths' willingness to participate.

Attitudes

An individual's positive or negative evaluation of participating in the cassava value chain. Institutional and socioeconomic factors each influence attitudes and subjective norms directly. Attitudes are shaped by the perceived benefits and challenges associated with the cassava value chain. This includes their beliefs about the benefits (Labor demand, Climate change, Inadequate technology, Price volatility, Competition) and

drawbacks (Income, Food security, Climate resilience, Health benefits, Industry growth) of participation. Subjective Norms are determined by family support, peer influence, and cultural expectations. Both attitudes and subjective norms feed into the behavioral intentions of youths.

Behavioral Intention

An individual's decision to participate or not participate in the cassava value chain is based on their attitudes. An individual's attitudes influence their intention to participate. Positive attitudes increase the likelihood of forming a positive intention. An individual's intention to participate leads to actual participation. Motivation and self-efficacy strengthen or weaken the connection between behavioral intention and actual youth participation. Youth participation manifests in the form of production, processing, or marketing, closing the loop and potentially re-influencing perceived benefits, attitudes, and subjective norms for ongoing behavioral intentions.

3.3 Theoretical Framework

The theories considered for this study are the Push-Pull Theory of motivation, the Theory of Reasoned Action (TRA), and the Human Capital Theory (HCT). Reviewed literature suggests that several approaches and theories can be used to encourage young people to participate in activities that will give them economic empowerment. According to Airth (2013), the push-pull theory of motivation posits that the desire to achieve a certain outcome is driven by both directional forces, a push and a pull toward the final objective. To analyze the factors influencing rural youth's decisions to participate in agricultural production in the southern region of Nigeria, Akpan *et al.* (2015) adopted this theory. It is based on a people's attitudes, subjective norms, and

intentions to carry out a certain conduct. The push factors (poverty, unemployment) and pull factors (market opportunities, training) together influence a person's behavior in a certain direction. The Theory of Reasoned Action (TRA) is a social psychology theory that also explains and forecasts human behavior. The main goal of the theory is to pinpoint the elements that contribute to the development and evolution of behavioral purpose (Ajzen & Fishbein, 1975). The attitude exhibited by a person toward a particular goal is influenced by his perceived benefits (income, profit, food security, climate resilience, health benefits, industry growth, etc.) and perceived challenges (labor demand, climate change, inadequate technology, price volatility, competition, etc.). The Theory of Reasoned Action (TRA) was used in studies by Senger *et al.* (2017) and Lee *et al.* (2018) to look at the factors influencing farmers' adoption of sustainable agricultural practices along the agricultural value chain. An additional theory considered was Human Capital Theory (HCT) which posits that investments in education, training, and health enhance an individual's productivity and earning potential, contributing to economic growth (Becker, 1962; Schultz, 1961). HCT views humans as capital assets, requiring investments to boost productivity and economic growth. Policies supporting education and training can reduce inequality and poverty.

Applying these theories to boost youth participation in the cassava value chain is a multifaceted approach integrating Push-Pull Theory, Theory of Reasoned Action (TRA), and Human Capital Theory (HCT). The conceptual framework considered all three theories to address motivational (push-pull factors), social (attitudes, norms, intentions), and economic (education, training) factors influencing youth engagement in the cassava value chain. By understanding the push factors (poverty, unemployment)

and the pull factors (market opportunities, training) and targeting attitudes, norms, and intentions, policymakers can encourage youth participation. Investing in education, training, and health (HCT) enhances youth productivity and earning potential. This integrated approach empowers youth to drive cassava value chain growth, promoting economic empowerment and sustainable development.

3.4 Method of Data Analysis

3.4.1 Analyzing the Proportion of Youth Involved in the Cassava Value Chains

By giving the respondents a collection of statements regarding the cassava value chains and asking them to rate their agreement on a 5-point Likert scale of strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1), the proportion of respondents in the cassava value chain was determined. Therefore, the rate of youth involvement in the cassava value chains was determined using straightforward percentages, graphs, or pie charts. The proportion of youth in cassava production (*Eypd*):

$$Eypd = \frac{\text{Number of youth in production}}{\text{Total number of youth in the cassava value chain}} * 100$$

The proportion of youth in cassava processing (*Eypr*):

$$Eypr = \frac{\text{Number of youth in processing}}{\text{Total number of youth in the cassava value chain}} * 100$$

The proportion of youth in cassava marketing (*Eym*):

$$Eym = \frac{\text{Number of youth in marketing}}{\text{Total number of youth in the cassava value chain}} * 100$$

3.4.2 Describing the Activities Involved in the Cassava Value Chain

Land preparation, planting, weeding, fertilizer application, controlling pests and diseases, and harvesting are all considered production operations. Peeling, washing, grating, pressing, fermenting, drying, milling, and packaging are examples of processing operations. Input marketing, storage, transportation, feed marketing, starch marketing, fresh food marketing, and gari marketing are examples of marketing and distribution activities. These made use of descriptive analysis.

3.4.3 Perceptions of the Youth in the Cassava Value Chain

The youth's perception of the cassava value chain was determined by descriptive analysis using the Perception Index method. The formula for the perception index is shown as;

$$ni = (\sum i/n)$$

ni connotes the index computed for a particular statement from a five-point Likert questionnaire under a main heading.

i connotes the figure assigned to a particular scale (e.g. -2 = strongly disagree, -1 = disagree, 0 = neutral, 1 = agree, and 2 = strongly agree).

n connotes the number of respondents.

$$m_i = \frac{\sum (n_1 + n_2 + \dots + n_i)}{c}$$

m_i connotes the index computed for a main heading (e.g. perception towards farming).

c connotes the number of sub-headings under the main headings.

$(n_1 + n_2 + \dots + n_i)$ connotes the summation of the indices computed for the individual statements. The overall perception index is computed from

$$Q = \left(\frac{\sum (m_1 + m_2 + \dots + m_i)}{k} \right).$$

Q connotes the overall perception index.

k connotes the number of main headings

$(m_1 + m_2 + \dots + m_i)$ connotes the summation of the main headings

Participants were asked to rate their opinions of the activities in the cassava value chain using a five-point Likert scale. The respondents were asked to rank certain statements, which have been adapted from the literature reviewed, on a scale of -2 to 2, where -2 represents strong disagreement, -1 represents disagreement, 0 represents neutrality, 1 represents agreement, and 2 represents strong agreement. These statements relate to perception indicators of youth participation in activities related to the cassava value chain. The mean score value in this instance is equal to zero for every statement that might be answered. Accordingly, a mean score of more than zero denotes a positive perception, whilst a mean score that is less than zero denotes a negative perception.

3.4.4 Estimating the Factors Influencing Youth Participation in each of the Cassava Value Chains

The logistic regression was used to estimate the binary outcome variable based on the independent variables, to find the variation of the dependent variable explained by the independents, and to determine the relative importance of each individual predictor to

estimate the factors influencing the youth's participation in each of the cassava value chains. A logit model has been used in related research on the push and pull variables influencing young people's adoption of certain technology and their involvement in agribusiness (Akpan *et al.*, 2015; Cheteni, 2016; Yakubu *et al.*, 2019; Nnadi & Akwiwu, 2008;).

$$\text{Logit: } \log \left[\frac{P_i}{(1-P_i)} \right] = X_i \beta_i + \varepsilon_i$$

$$P_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n x_n + \varepsilon_i$$

Where

P_i (dependent variable) represents the probability that the youth participated in a cassava value chain (i.e. either production, processing, or marketing).

$(1 - P_i)$ represents the probability that the youth did not take up that cassava value chain activity.

β_0 is a constant term

$X_1 - X_i$ are the explanatory variables

ε_i is the error terms

Table 3.1 Description of Explanatory Variables, Measurement, and a-priori expectations

Explanatory Variable	Measurement	A priori expectation
Gender	1=Male, 0 = Female	+/-
Household size	Number	+
Level of education	Years	+
Marital status	1 Married, 0 otherwise	+/-

Experience	Years	+
Perception index	1=Positive, 0 = Negative	+
Land access	1 Yes, 0 No	+
Credit access	1 Yes, 0 No	+
Market access	1 Yes, 0 No	+
Extension services access	1 Yes, 0 No	+

3.5 Variables Explained

Participation: The youth involvement in agriculture and related activities is measured by the dependent variable. A 1 will indicate participation and a 0 will indicate non-participation. In the context of this study, participation will be defined as pursuing activities along the cassava value chain.

Experience: The study measures how long a young respondent has been involved in the cassava value chain. Gaining better skills via experience is typically associated with making better decisions and producing quality outputs. An individual with a long experience in agriculture should be optimistic and strive to continue participating in the activities that make up the cassava value chain.

Gender: Gender is a dummy variable with two possible values: 1 for male and 0 for female, that is used to indicate the gender of the responder. Because the activities involved in cassava cultivation are physically demanding, men are more likely than women to participate in these activities. It is anticipated that involvement in the cassava value chain will be affected by gender in one of two ways: positively or negatively.

Marital status: The respondent's marital status was used to ascertain their current relationship status. Either 0 = otherwise or 1 = married are the possible expressions for the variable. There is a strong correlation between rural youths' marital status and their involvement in agricultural activities (Kimaro *et al.*, 2015). Therefore, it is anticipated that young respondents' marital status will either positively or negatively affect their desire to engage in activities related to the cassava value chain.

Household status: The number of persons who live together in the same home for more than three days a week is determined by the household size variable. An increase in the labor force could result from larger households. However, because larger households typically have an increasing demand for their household consumption and are less productive, larger households do not always equate to increased productivity and engagement (Hadebe, 2016). It is anticipated that the size of the household will positively influence the youths' participation in agriculture and its related activities.

Level of Education: Higher educated young are less likely to be interested in participating in agriculture, unless there is a special circumstance, and instead tend to aspire to options outside of agriculture (Yami *et al.*, 2019). There may be fewer career and educational options for young people with lesser levels of education. As a result, it is anticipated that young people in this age group will engage in agricultural-related activities. The majority of uneducated youths reside in rural areas where agriculture is the primary occupation. There are limited career options in other industries for the youth in this category, therefore their sole alternative is agriculture (Kimaro *et al.*, 2015).

Formal education equips individuals with knowledge and skills that can be applied to various fields, including agriculture. Educated individuals may have a better

understanding of modern farming practices, technology, and sustainable methods. Educated individuals may be more inclined to adopt modern farming techniques, precision agriculture, and other innovations that can increase efficiency and productivity. Educated farmers may be more likely to engage in entrepreneurial activities, implement sound business practices, have better access to resources, including financial support, research findings, and market information, a better understanding of policy issues related to agriculture, and explore value-added products. Young individuals who have completed formal education are expected to be more involved in the cassava value chain.

Land accessibility: This variable measures how easily the young respondent may acquire land for farming or other related activities. Lack of land is one of the largest barriers to young people entering agriculture (Afande *et al.*, 2015). Young individuals with access to land, whether as tenants or owners, are predicted to participate in agriculture and related activities more frequently.

Extension Services Access: The study seeks to assess the youth's access to extension services and support, including guidance, information, and input. In order to achieve more agricultural participation, Bahta *et al.* (2018) stressed the significance of extension support services for achieving improved agricultural participation. It is anticipated that young people who have access to extension services will want to get more involved in the production of cassava.

Market Access: The variable is used to measure how accessible and available the market is to young people who are involved in the cassava value chain. Market access was found by the study to be an essential requirement for involvement in the cassava

value chain. Market access is one of the primary factors that determine participation in the profitable cassava value chain (Khapayi & Celliers, 2015). It is expected that engagement in the cassava value chain will be positively viewed by young people who have access to a well-established market.

Credit Access: Young people with access to finances, whether via personal funds, loans, or credit from financial institutions, are likely to have positive attitudes and a desire to participate in the cassava value chain.

Perceptions: The youth's involvement in the cassava value chain is motivated by their perception that agriculture provides financial advantages. It is expected that youth who perceive financial gains from the cassava value chain will be more likely to participate in it. Young people are more inclined to participate if they think well of the activities that make up the cassava value chain.

3.6 Hypotheses Underlying the Study

1. H_0 : There is no statistically significant difference in the proportion of youth involvement in the cassava value chain.
 H_1 : There is a statistically significant difference in the proportion of youth involvement in the cassava value chain.
2. H_0 : There is no statistically significant difference in the perceptions of the youth toward the cassava value chain based on their level of exposure, knowledge, and involvement in the agricultural sector.

H_1 : There is a statistically significant difference in the perceptions of youth towards the cassava value chain based on their level of exposure, knowledge, and involvement in the agricultural sector.

3. H_0 : There is no statistically significant relationship between the factors influencing youth participation in the cassava value chain.

H_1 : There is a statistically significant relationship between the factors influencing youth participation in the cassava value chain.

3.7 Hypothesis Testing with the test Statistic (t-Test)

A statistical hypothesis test called a t-test is used to see if the means of two groups or populations differ significantly from one another. The t-test is a versatile and widely used statistical method that helps researchers and decision-makers make data-driven conclusions about differences in means, whether in scientific research, quality control, social sciences, or business analysis. Its importance lies in its ability to provide evidence for or against hypotheses and facilitate informed decision-making based on data analysis (Welch, 1947; Zar, 2010).

3.7.1 Independent Samples T-test

When comparing the means of two independent groups to see if there is a significant difference, this kind of t-test is utilized. To compare the mean scores of two distinct student groups who received instruction from separate teachers, you may, for instance, apply an independent samples t-test. The null hypothesis (H_0) typically assumes that

there is no difference between the group means, while the alternative hypothesis (H_1) suggests that there is a significant difference.

$$t = \frac{\tilde{x}_1 - \tilde{x}_2}{s_p \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where:

- t is the t-statistic
- $\tilde{x}_1 - \tilde{x}_2$ are the sample means of the two groups
- s_p is the pooled standard deviation
- n_1 and n_2 are the sample sizes of the two groups

If the t-statistic is greater than the critical t-value (or if the p-value is less than alpha), you reject the null hypothesis in favor of the alternative hypothesis, indicating a significant difference between the groups. This is done by calculating the Degrees of Freedom (df) and the Critical Value, or p-value. The null hypothesis cannot be rejected if the t-statistic is smaller than the crucial t-value (or if the p-value is bigger than alpha), indicating that there is no meaningful difference between the groups. Based on your decision, you can conclude whether there is a significant difference between the group's analysis (Welch, 1947; Zar, 2010).

3.8 Diagnosis Tests

Any model employed in the study must meet certain assumptions for it to be considered legitimate. If the presumptions are not met, some issues could arise including excessive standard errors or biased coefficient estimations, which could result in inaccurate

statistical conclusions. Several diagnostic tests were carried out in this study to see whether the models utilized were accurately specified or whether there was another issue that could have prevented the model from operating as intended.

3.8.1 Multi-collinearity Test

When there is a high level of linear dependency between the explanatory variables, multi-collinearity takes place. Because of this, the coefficients have large standard errors and few significant variables, which leads to erroneous estimations (Greene, 2000). The Variance Inflation Factor (VIF) is used to test for multi-collinearity. Gujarati (2004) and Salisu (2016) state that any variable having a VIF larger than 10 indicates the presence of multi-collinearity. Multi-collinearity is not present for the variables included in the models, according to the VIF values in Appendix 1. The average VIF for the Binary logit models was 1.29 for production, 1.15 for processing, and 1.16 for marketing.

3.8.2 Pearson Correlation Test

A statistical technique for determining the direction and strength of a linear relationship between two continuous variables is the Pearson correlation test. British statistician Karl Pearson created it in the latter half of the 1800s. The degree of linear relationship between two variables is measured by the Pearson correlation coefficient, or "r." The "r" has a value between -1 and 1. (Pearson, 1895; Myers *et al.*, 2011). Strong positive linear relationships, in which one variable tends to increase as the other does increase, are indicated by "r" values that are close to 1. Strong negative linear relationships, in

which one variable tends to decrease as the other grows, are indicated by "r" values that are close to -1. There may not be much of a linear relationship between the two variables if "r" is near to 0.

The following formula is used to get the Pearson correlation coefficient, or "r":

$$r = \frac{\sum(X_i - \bar{X})\sum(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{X})^2\sum(Y_i - \bar{Y})^2}}$$

Where:

X_i and Y_i are individual data points for the two variables.

$\bar{X}$ and $\bar{Y}$ are the means (averages) of the two variables

The association between the independent variables included in the models was not significant, according to the findings of the Pearson Correlation Tests in Appendix 2. It is implied by this that the variables are suitable for inclusion in the model since they satisfy the necessary assumption.

3.9 Method of Data Collection

3.9.1 Research Design

This study employed a cross-sectional survey design, incorporating both quantitative and qualitative data collection methods, to capture a snapshot of young people's experiences and perspectives on agriculture (Creswell, 2012; Neuman, 2012). This design was chosen for its efficiency in gathering self-reported data on beliefs, opinions, and experiences within limited time and financial constraints (Cohen *et al.*, 2007; Bhattacharjee, 2012). Surveys were deemed ideal for exploring research questions focused on personal beliefs and opinions, with variables measurable through questionnaire responses (Neuman, 2012).

3.9.2 Source of Data

Primary data sources are those that are gathered directly from the field or from study participants. Conversely, secondary data sources consist of already gathered and recorded information from other researchers (Douglas, 2015). Primary data sources from respondents and secondary data from government reports on youth employment statistics and other researchers were used in this study's analysis.

3.10 Sample Size

This study intended to collect data from a total of 379 respondents, comprising a substantial number of youth farmers from the communities using the Cochran equation as mathematically expressed below. The study adopted a survey design and ended up collecting data from only 284 respondents due to resource constraints. A total of 400 observations were made because some of the respondents were involved in more than one activity in the chain. From the data, the cassava value chain segments were cassava production (160 observations), cassava processing (130 observations), and cassava marketing (110 observations).

$$n = \frac{Z^2 p(1-p)}{e^2},$$

$$\text{Thus, } n = \frac{1.96^2 \cdot 0.56(0.44)}{0.05^2} = 379$$

Where, n = sample size

Z = standard error (1.96)

p = estimated proportion of youth (56%)

$1 - p$ = estimated proportion of elderly (44%)

e = desired level of precision (5%)

3.11 Sampling Techniques

There were two types of sampling processes used: probability and non-probability. Simple random sampling procedures were used to select the youth farmers and purposive sampling of farming communities for the study. The communities selected for the study were Adeiso, Danso, Okurase, Asikesu, and Asuaba. These areas were considered to be the hub of cassava production, processing, and marketing, hence the use of purposive sampling. The research considered both qualitative and quantitative questionnaires with open-ended and closed-structured questions.

3.12 Data Collection Techniques

This research employed a survey design, more precisely a cross-sectional survey design. A cross-sectional design produces a snapshot of a situation at a particular point in time (Cohen *et al.*, 2007; Bhattacharjee, 2012). For Neuman (2012), surveys are a good choice when the research question is about self-reported beliefs, opinions, or behaviors and the variables can be measured by having people answer questions.

3.13 Study Area

The Upper West Akim District served as the study's area. With a population of approximately 87,051 and a total land area of approximately 342.3 km², the district is situated along the main Nsawam-Kade route. There are 46,735 people in the productive age range of 15 to 64 years old, of which 56% are young people (15 to 35 years old) and 44% are people in the age range of 36 to 64 years old (GSS, 2010 PHC). Among the main crops grown in the district are pineapple, oil palm, pawpaw, cassava, and plantains.

Due to the district's reputation for producing premium gari from cassava, many traders visit the area for trading purposes nationwide. Within the district, there is accompany called HPW Fresh and Dry Limited involved in processing of fruits. The district is also surrounded by Ayensu Starch Company Limited (ASCL), Specialty Beer Ghana Limited in Nsawam, and Blue Skies Gh. Ltd. for processing fruits located in Nsawam. Below is the Ghana map in which the study area map is situated.

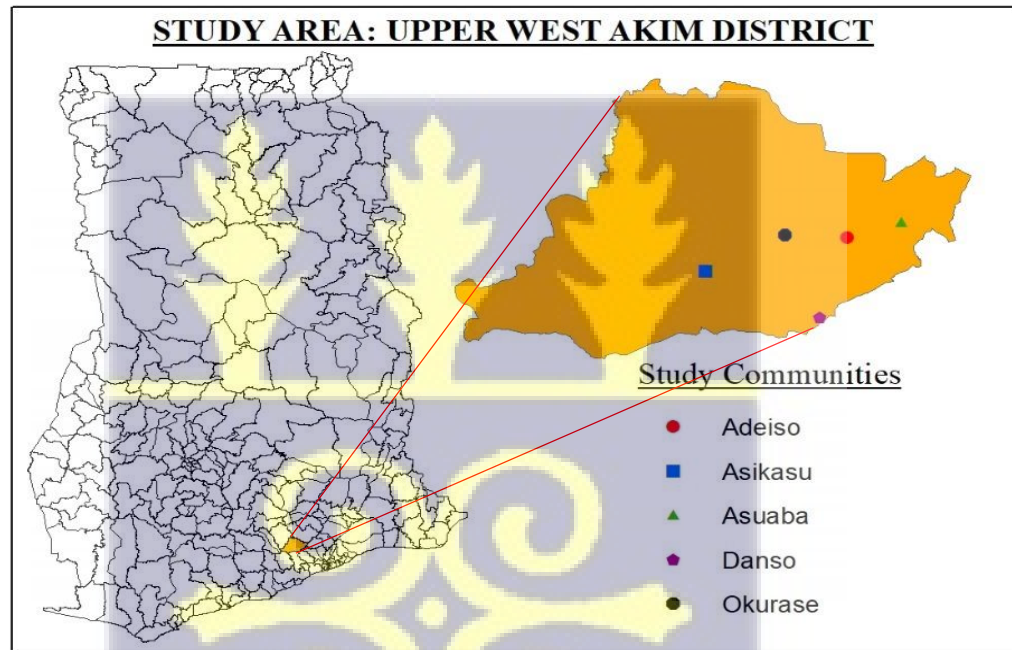


Figure 3.2 Study Area: Upper West Akim District

Source: ArcGIS Software

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The research findings are presented and discussed in this chapter. It involves the description of the socio-economic characteristics of the research area respondents, examines the percentage of young people engaged in each cassava value chain, the gender distribution of the youth in the cassava value chain, distribution of respondents according to their value chain-related characteristics, describing youth participation in the activities involved in each of the cassava value chains, perceptions of the youth towards the cassava value, and finally, factors influencing the participation of the youth in the cassava value chain.

4.2 Socio-economic Characteristics of the Respondents

The results from Table 4.1 show that 56.34% of the respondents are between the ages of 18 to 23 years, 28.52% are between the ages of 24 to 29 years, 15.14% are between the ages of 30 to 35 years, and the majority (84.86%) of the respondent are less than 30 years of age with a mean of 29.36 years. This implies that the respondents across the three value chains under consideration are actually in their youthful ages and are very productive if adequately empowered. This is in agreement with the findings of Glover *et al.* (2015) who reported that most youth in their study area are in their late twenties. Furthermore, the majority (55.28%) of the respondents are males, 44.72% are females.

This implies that along the cassava value chain, the males are dominant in the study area which could be due to the energetic demand of the activities. Male farmers can engage more in energy-demanding farming activities, especially cassava production. This agrees with the findings of Muhammad *et al.* (2020) who posited that male dominance in cassava production is due to the laborious nature of cassava farming operations, while females are involved in other less stressful activities such as processing and marketing. Meanwhile, 38.73% of the respondents are single, and 61.27% are married implying that more than half of the youth farmers have responsibilities and use the income realized from cassava value chain activities to care for their household. This finding is in agreement with that of Glover *et al.* (2015) who reported that most of the youths in their study area were married and had families to care for. In terms of household size, 65.85% of the respondents had between four to seven persons in their families, 23.94% had between seven to eleven persons in their families and 10.21% of them had between one to three persons in their families. The results further revealed that the majority of the youths had primary education (27.81%), secondary education (26.76%), junior high school education (18.66%), no formal education (18.66%), and tertiary education (8.1%). This implies that the respondents are literate which could help them to be innovative in terms of adopting agricultural technologies in the cassava value chain. This finding is in agreement with the work of Muhammed *et al.* (2020) who reported that respondents in their study area are educated and as a result, enhanced adoption of modern agricultural technologies.

Table 4.1: Socio-economic Characteristics of the Respondents

VARIABLES	FREQUENCY	PERCENTAGE	
Age (years)			
18-23	43	56.34	Mean = 29.36
24-29	81	28.52	
30-35	160	15.14	
Sex			
Male	157	55.28	
Female	127	44.72	
Household size			
1-3	29	10.21	mean = 5.77
4-7	187	65.85	
8-11	68	23.94	
Educational attainment			
No formal education	48	16.9	
Primary	62	21.83	
Junior high	61	21.48	
Secondary	72	25.35	
Tertiary	41	14.44	
Marital status			
Single	110	38.73	
Married	174	61.27	

Source: field survey 2023

From Figure 4.1, the cassava value chain's youth participation is skewed, with 40% in production, 32.5% in processing, and 27.5% in marketing, due to significant entrepreneurship barriers. Processing and marketing require substantial capital, specialized skills, and compliance with quality standards, limiting youth involvement. In contrast, production demands less financial investment and technical expertise,

making it a more accessible option for resource-constrained youth. Sociocultural norms also influence this disparity, as production is often seen as traditional and attainable, while processing and marketing are perceived as requiring entrepreneurial expertise. To bridge this gap, targeted interventions are necessary to address skill gaps, expand financial access, and enhance market infrastructure, enabling youth to tap into the more profitable stages of the cassava value chain.

Analyzing the Proportion of Youth Involved in each of the Cassava Value Chains.

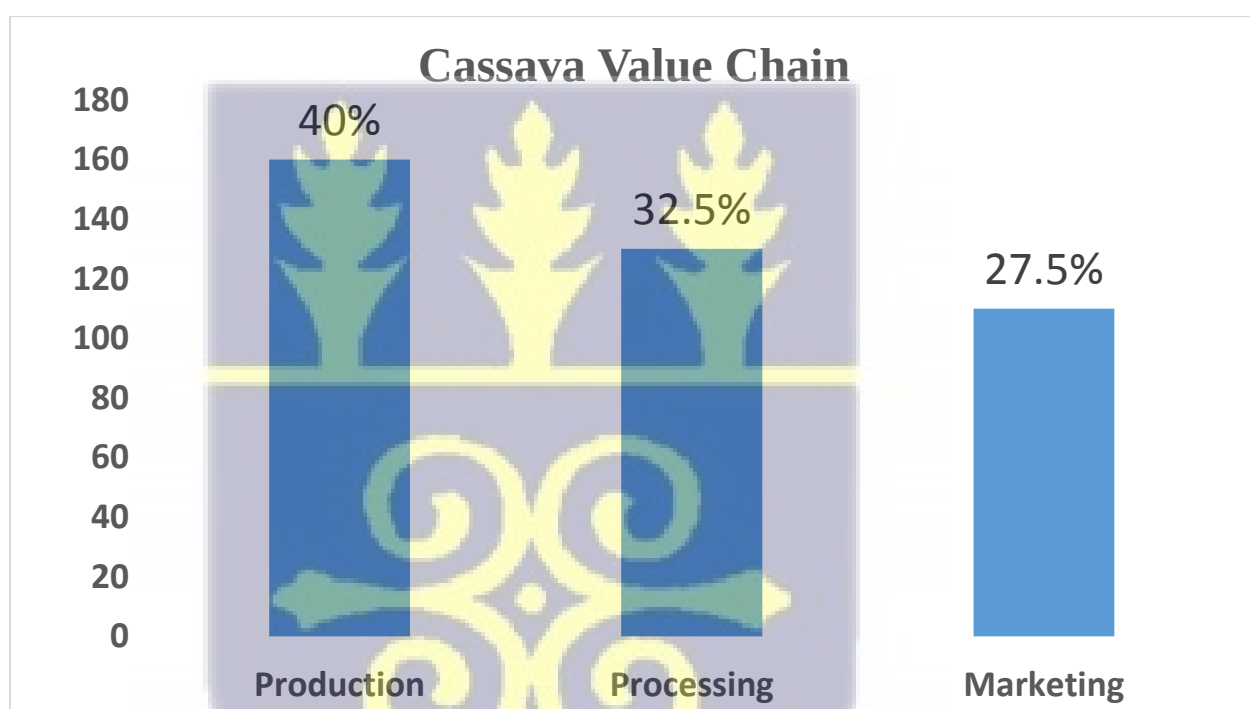


Figure 4.1 Participation of the Youth in the Cassava Value Chain

Source: field survey 2023

On gender distribution of the youth along the cassava value chain in Table 4.2, 86.25% and 13.75% representing females and males respectively are in cassava production. In cassava processing, there are 67.69% of females and 32.31% of males. In marketing,

65.45% of females and 34.55% of females are involved. The youth representing 26% are in only cassava production of which 94.23% are males and 5.77% are females.

Table 4.2 Gender Distribution of the Youth in the Cassava Value Chain

Cassava value chain	Frequency	Percentage
Production	160	40.00
Female	22	13.75
Male	138	86.25
Processing	230	32.50
Female	88	67.69
Male	42	32.31
Marketing	110	27.50
Female	72	65.45
Male	38	34.55
Only Production	104	26.00
Male	98	94.23
Female	6	5.77
Only Processing	58	14.50
Male	9	15.52
Female	49	84.48
Only Marketing	37	9.25
Male	5	13.51
Female	32	86.49
Production & Processing	26	6.50
Male	22	85.71
Female	4	14.29
Production & Marketing	28	7.00
Male	22	78.57
Female	6	21.43
Processing & Marketing	60	15.00
Male	8	13.33
Female	52	86.67
Production, Processing & Marketing	87	21.75
Male	54	62.07
Female	33	37.93

Source: field survey 2023

In only cassava processing, 14.5% of the youth participate of which 15.52% are males and 84.48% are females. Regarding participating in marketing only, 9.25% were

involved, of which 13.51% were males and 86.49% were females. The data also revealed that 6.5% of the youth participated in both cassava production and processing of which 84.62% are males and 15.38% are females. Of 7% of the youth in both production and marketing, 78.57% are males and 21.43% are females. Those in both cassava processing and marketing are 15% of which 13.33% are males and 86.67% are females. Of the respondents who engaged in all three chains (21.75), 62.07% are males and 37.93% are females. The disparity in gender distribution along the cassava value chain may be attributed to sociocultural factors. In production, men's dominance may stem from land ownership, labor-intensive tasks, and traditional farming roles. Women's prevalence in processing and marketing could be linked to domestic responsibilities, food preparation skills, social networks, entrepreneurial spirit, and flexibility. This is in line with the findings of Doss *et al.* (2018) that men control land ownership, limiting women's access to productive resources. Oduol *et al.* (2017) that women's processing activities are linked to domestic responsibilities. Intersectional factors such as education, socioeconomic status, and cultural norms also influence participation. Cross-cutting factors include access to credit, technology adoption, and policy support. Addressing these disparities requires gender-sensitive training, targeted financial support, policy reforms, community engagement, and empirical research to understand local contexts.

The level of youth involvement in cassava production is ascertained using a Likert scale of 5 to 1, the youth agreed or disagreed with the statements in Table 4.3. Agree if the mean score is greater than 3.44 and disagree if the mean score is less than 3.44. From the Table, the respondents agreed that they actively engage in cassava cultivation ($\bar{X} = 4.49$) and ranked 1st. This indicates that the youth viewed cassava production as a

lucrative venture and therefore actively engaged in it. Consistent with Muhammed *et al.*'s (2020) study in Nigeria, this research aligns with findings that youth view cassava cultivation as a lucrative venture and vital income source, driven by strong market demand, ultimately enhancing their livelihood.

Table 4.3 Level of Participation in Cassava Production

Statement regarding cassava production	Weighted sum	Mean score	Remark	Rank
I actively engage in cassava cultivation	719	4.49	Agree	1 st
I want to explore new cassava varieties	706	4.41	Agree	2 nd
I sell all/most of my cassava output	700	4.38	Agree	3 rd
I engage hired labor to weed and harvest my cassava	675	4.22	Agree	4 th
I expand my cassava farm each year	404	2.53	Disagree	5 th
I have enough land to expand my cassava production	384	2.40	Disagree	6 th
I want to exit cassava production	268	1.68	Disagree	7 th

Source: field survey 2023

They also agreed to explore new cassava varieties ($\bar{X} = 4.41$) ranked 2nd, implying that improved planting material will enhance output. They agreed that they sell all/most of their cassava outputs ($\bar{X} = 4.38$) ranked 3rd and engaged hired labor to help work on their cassava farms ($\bar{X} = 4.22$) ranked 4th. However, the respondents disagreed that they expand their cassava farm each year ($\bar{X} = 2.53$) and ranked 5th, because they did not

have enough land to expand cassava production ($\bar{X} = 2.40$) and ranked 6th, but disagreed to exit cassava production ($\bar{X} = 1.68$) and ranked 7th.

Table 4.4 sought to determine the level of youth involvement in the cassava processing. A Five-Likert scale statements to which the youth agreed or disagreed. Agree if the mean score is greater than 4.15 and disagree if the mean score is less than 4.15. The majority (mean score of 4.52) of the youth, ranked 1st, strongly agreed that they actively engage in cassava processing. This study corroborates Adebayo *et al.*'s (2020) discovery that the majority of Nigerian youth actively engaged in the cassava process and therefore perceive cassava processing as an attractive income-generating activity, dependent on training and financial resources. Ranked 5th are those who agreed that they participate in developing cassava-based products which scored a mean of 4.18. The youth disagreed that they have enough knowledge and skills in processing cassava and this scored a mean of 3.16 (ranked 7th). The majority, ranked 6th, disagreed that they engaged in hired labor to help in processing cassava. They also agreed that financial support is needed to enhance their cassava processing venture with a mean score of 4.32 and ranked 4th. And ranked 3rd with a mean score of 4.33 the youth agreed to involve more in cassava processing activities in the future.

The level of youth involvement in cassava marketing was determined using the statements in Table 4.5. On a Likert scale of 5 to 1, the youth agreed to statements if the mean score was greater than 4.27 and disagreed if the mean score was less than 4.27. From the Table, the respondents agreed that they actively engage in cassava and cassava products marketing ($\bar{X}=4.69$) and ranked 1st. This indicates that the youth viewed cassava marketing as a lucrative venture and therefore actively engaged in it.

Table 4.4 Level of Participation in Cassava Processing

Statement regarding cassava processing	Weighted sum	Mean score	Remark	Rank
I actively engage in cassava processing	587	4.52	Agree	1 st
I am interested in improving my knowledge and skills in cassava processing	577	4.44	Agree	2 th
I plan to be more involved in cassava processing activities in the future	563	4.33	Agree	3 rd
I need financial support to enhance cassava processing	561	4.32	Agree	4 nd
I participate in developing cassava-based products	543	4.18	Agree	5 th
I engaged hired labor to help in processing cassava	531	4.09	Disagree	6 th
I have enough knowledge and skills in the process of cassava	411	3.16	Disagree	7 th

Source: field survey 2023

This research confirms the discoveries of Ephrem *et al.* (2021) and Akinyele *et al.* (2016), showing that youth are well-informed about cassava marketing's advantages, including financial benefits, skill development, and enhanced livelihoods, and are actively involved in the cassava value chain. Therefore, are ready to explore any innovations to enhance cassava marketing ($\bar{X} = 4.46$) ranked 2nd. They agreed that they needed financial support to enhance cassava marketing ($\bar{X} = 4.41$) ranked 3rd. The respondents perceived the prospects of cassava marketing as promising with a mean of $\bar{X}=4.36$ and ranked 4th. They however disagreed to had not been satisfied with their current marketing channels ($\bar{X} = 4.19$) and ranked 5th. They again disagreed with

engaging hired labor to help market cassava/products ($\bar{X} = 3.53$) ranked 6th, implying that cassava marketing does not require much intensive labor.

Table 4.5 Level of participation in cassava marketing

Statement regarding cassava marketing	Weighted sum	Mean score	Remark	Rank
I actively engage in cassava/product marketing	516	4.69	Agree	1 st
I am ready to explore any innovation to enhance cassava marketing	490	4.46	Agree	2 nd
I need financial support to enhance cassava marketing	485	4.41	Agree	3 rd
I perceived the prospects of cassava marketing as promising	479	4.36	Agree	4 th
I am not satisfied with my current marketing channels	461	4.19	Disagree	5 th
I engaged hired labor to help market cassava/products	388	3.53	Disagree	6 th

Source: field survey 2023

4.3 Describing Youth Participation in the Activities Involved in Each of the Cassava Value Chains.

The production of cassava involves a variety of processes and activities. The result of the cassava production activities is presented in Table 4.6. The frequencies represent the youth's involvement in farming activities. The results indicated that the youth engaged in hired labor to help them on their farms. Out of the 160 youths who are into cassava production, 79.38% are involved in farmland preparation, 75.63% are involved in planting of cassava, 71.88% are involved in weed control, 45.63% are engaged in

cassava harvesting, 16.25% are involved in fertilizer application, and 11.88% involved in pests/diseases control. The majority of the youths did not apply fertilizer on their cassava farms except for a few of them who intercrop cassava with maize. In contrast to cereals, cassava can withstand lower soil fertility and is more resilient to diseases, pests, and droughts. (Ogunyinka, 2020). This explains why young people are not as involved in the fight against diseases and pests. The majority of respondents are male, which may explain why men predominate in the majority of cassava production operations. However, because they require fewer labor hours than weeding and clearing land, marketing and processing cassava produce is mostly seen as a female-dominated field. This research supports the findings of Chikezie et al. (2012) and Apata (2019), who found that young people in rural areas actively participate in a range of cassava production activities.

Table 4.6. Describing the Cassava Production Activities

Activities	Frequency	Percentage	Ranks
Land preparation	127	79.38	1 st
Planting of cassava	121	75.63	2 nd
Weed control	115	71.88	3 rd
Cassava harvesting	73	45.63	4 th
Applying fertilizer	26	16.25	5 th
Pests/ diseases control	19	11.88	6 th

Source: field survey 2023

Processing activities are crucial in transforming raw cassava into finished products. A variety of cassava processing operations were carried out by the youths, as shown by the outcome in Table 4.7. The frequencies represent the youth's involvement in processing activities. Whereas cassava peeling ranked 1st with 79.23%, gari roasting ranked 2nd with 64.62%, grating or grinding ranked 3rd with 48.46%, and cassava harvesting ranked 4th with 39.23%. This was followed by drying cassava for flour ranked 5th at 18.46%, and milling dried cassava ranked 6th at 8.46%

Table 4.7. Describing Cassava Processing Activities

Activities	Frequency	Percentage	Ranks
Cassava peeling	103	79.23	1 st
Gari roasting	84	64.62	2 nd
Grating/Grinding	63	48.46	3 rd
Harvesting	51	39.23	4 th
Drying cassava	24	18.46	5 th
Milling dried cassava	11	8.46	6 th

Source: field survey 2023

Cassava marketing activities involve a range of strategies and actions to promote and sell cassava products to the target market. Table 4.8 demonstrates that most of the respondents (48.18%) ranked 1st are involved in gari marketing, marketing of fresh cassava (42.73%) ranked 2nd, and cassava dough marketing (38.18%) ranked 3rd. Also, 24.55% of the respondents are involved in cassava flour marketing (ranked 4th), 19.09% are involved in starch marketing (ranked 5th), and 16.36% are involved in cassava peels marketing (ranked 6th).

Table 4.8. Describing Cassava Marketing Activities

Activities	Frequency	Percentage	Rank
Gari marketing	53	48.18	1 st
Fresh cassava marketing	47	42.73	2 nd
Cassava dough marketing	42	38.18	3 rd
Cassava flour marketing	27	24.55	4 th
Starch marketing	21	19.09	5 th
Cassava peels marketing	18	16.36	6 th

Source: field survey 2023

4.4 The Perceptions of the Youth in the Cassava Value Chain

The distribution of the youths' mean perception ratings regarding cassava production is shown in Table 4.9. A positive view is implied by a mean score larger than 0 and a negative perception is implied by a mean score lower than 0. The results indicated that the youth generally agreed with the statements that they are interested in getting involved in cassava production with a positive mean score of 1.61. With a positive mean score of 1.33, the youth perceived cassava production as a profitable venture. They believed that cassava production can contribute to food security (mean score of 1.41). Cassava production is perceived by the youths as a labor-intensive activity (mean score of 0.37). Promoting cassava production among the youth can help reduce the unemployment rate (mean score of 1.39), a means of achieving financial independence and reducing poverty (mean score of 1.32), and financial and extension support will encourage rural youth participation (mean score of 1.53). The respondents however

disagree with the statement that the youth prefer white-collar jobs to cassava cultivation with a negative mean score of 0.58. In all, the perception index of the youth toward cassava production shows a positive mean value of 1.05 since it is greater than the average score (0). These findings are in agreement with the studies conducted by Ng'atigwa *et al.* (2020), August (2020), and Mukasa *et al.* (2016).

Table 4.9. Perceptions of the Youth in Cassava Production

Production Statement	Min	Max	Mean	Std. Dev
I am interested in getting involved in cassava production	-2	2	1.61	0.55
Cassava production is a profitable venture for the youth	-2	2	1.33	0.77
I believe that cassava production can contribute to food security	-2	2	1.41	0.67
I perceive cassava production as a too much labor-intensive activity	-2	2	0.37	1.19
I preferred white-collar jobs to the cassava cultivation	-2	2	0.58	0.99
I believe that promoting cassava production among the youth can help reduce the unemployment rate	-2	2	1.39	0.70
I perceive cassava cultivation as a means of achieving financial independence and reducing poverty	-2	2	1.32	0.55
Financial and extension support will encourage rural youth participation	-2	2	1.53	0.53
Perception Index			1.05	

Source: field survey 2023

Table 4.10 data indicate that, with a mean score of 1.63, the majority of youths considered cassava processing as a means of generating revenue. They disagreed that cassava processing is a low-value or prestige activity, with a negative mean score of 0.45. There was disagreement that cassava processing is a dirty and physically demanding activity, which scored a negative mean of 0.16. Further, they agreed cassava processing can lead to value addition and product diversification, with a mean score of

1.25. With a positive mean score of 1.42, they expressed interest in learning about and becoming knowledgeable about cassava processing. Access to finance, training, and market information can help promote cassava processing activities among the youth, with a positive mean score of 1.64. In all, the perception index of the youth toward cassava processing is 0.89. This implies that all other things being equal, there should be increased involvement of the youth in cassava processing. This is in line with the findings from the works done by Adebayo *et al.* (2020) and Ng'atigwa *et al.* (2020).

Table 4. 10. Perceptions of the Youth in the Cassava Processing

Processing Statement	Min	Max	Mean	Std. Dev
I see cassava processing as a source of income generation	-2	2	1.63	0.50
Cassava processing is a low-value/prestige activity	-2	2	-0.45	1.21
Cassava processing is a dirty and physically demanding activity	-2	2	-0.16	1.28
Cassava processing can lead to value addition and product diversification	-2	2	1.25	0.59
I am interested in acquiring skills and knowledge related to cassava processing	-2	2	1.42	0.66
Access to finance, training, and market information can help promote cassava processing activities	-2	2	1.64	0.50
Perception Index			0.89	

Source: field survey 2023

The result from Table 4.11 shows that the youths perceive cassava as a profitable crop with high market demand and a viable source of income, which attained a mean score

of 1.75. They agreed that cassava marketing provides valuable opportunities for youth entrepreneurship, which attained a positive mean score of 1.32. The youth again agreed that the marketing of cassava products is adequately promoted in their area; this also scored a positive mean of 1.23. Further, they agreed that they are adequately informed about the benefits and potential of cassava marketing; this attained a mean score of 1.25, and that the marketing channels for cassava products are easily accessible for young farmers, which has a positive mean score of 1.42.

Table 4. 11. Perceptions of the Youth in the Cassava Marketing

Marketing Statement	Min	Max	Mean	Std. Dev
I perceive cassava as a profitable crop with high market demand and a viable source of income	-2	2	1.75	0.50
Cassava marketing provides valuable opportunities for youth entrepreneurship	-2	2	1.32	0.59
Marketing of cassava products is adequately promoted in our area	-2	2	1.23	0.63
I am adequately informed about the benefits and potential of cassava marketing	-2	2	1.25	0.69
Marketing channels for cassava products are easily accessible for young farmers	-2	2	1.42	0.55
Sufficient training and capacity-building programs will boost my interest in cassava marketing activities	-2	2	1.49	0.50
Perception Index			1.41	

Source: field survey 2023.

Sufficient training and capacity-building programs will boost their interest in cassava marketing activities, which attained a positive mean score of 1.49. In all, the perception index of the youth toward cassava marketing is 1.41. This also implies that all other things being equal, there should be increased involvement of the youth in cassava processing. This is consistent with the research conducted by Ng'atigwa et al. (2020), Amaza et al. (2017), and Ephrem et al. (2021).

The overall perception index of the youth toward the cassava value chain is 1.11. This is the average value of the perception indexes of the individual value chains (cassava production perception index, cassava processing perception index, and cassava marketing perception index). Thus, $1.11 = [(1.05 + 0.89 + 1.41) / 3]$. According to this score, young people in the study area have a favorable opinion of the cassava value chain. This suggests, however, that the degree of engagement in the value chain activities can be significantly influenced by an individual's favorable opinion of the cassava value chain. A positive perception can spark an attraction and interest in individuals to engage in value chain activities, and inspire and drive individuals to invest, and acquire the necessary skills and knowledge. To enhance engagement and investment, policymakers should develop targeted training programs, provide affordable credit options, establish market linkages, and promote entrepreneurship. Investing in value chain infrastructure, technology, and innovation will increase efficiency and profitability. Key stakeholders, including government agencies, private sector investors, NGOs, educational institutions, and youth organizations, must collaborate to address factors influencing youth perception and engagement.

4.5 Factors Influencing Youth's Participation in the Cassava Value Chain

Before the logistic regression, Exploratory Data Analysis (EDA) was done to visualize and analyze the data to understand its underlying structure, identify patterns, and uncover relationships between variables. The outcomes of this analysis is displayed in the appendices. The cassava production participation correlation matrix indicates a strong positive correlation between participation and perception, farm size, market access, and credit access but weak positive relationship with household, marital status, gender, experience level of the respondents, access to credit, extension services, and access to market. However, cassava production participation relates negative with educational level of the respondents. The cassava processing youth participation correlation matrix shows that there is weak positive correlation between the participation and household, marital status, experience of the respondent, access to credit, market information, and perception of the respondents. However, very weak relation exists between participation and gender, and educational level of the participants. For cassava marketing participation, weak positive correlation between cassava marketing participation and household, marital status, experience, credit to farmers, market information, and perception of the youth into the cassava marketing side. But negatively correlated with gender, and educational level.

Table 4.12 displays the explanatory variables, their coefficients, and standard errors. The parameter estimates from the logit model indicate which way the independent variables affect the dependent variable. With a chi-squared value of 305.42, the total logit regression model for production participation indicated a strong fit and was statistically significant at the one percent probability level.

Table 4.12: Estimation of the Factors Influencing Youth Participation in the Cassava Value Chain

Variables	Production Participation	Processing Participation	Marketing participation
Socio-economic factors:	Coefficient & Standard Error:	Coefficient & Standard Error:	Coefficient & Standard Error:
Gender (male = 1)	4.53 (0.84)***	-1.77 (0.29)***	-1.44 (0.35)***
Household size	0.067 (0.16)	-0.08 (0.08)	0.18 (0.09)*
Educational level:			
Primary education	2.49 (0.81)***	-	-
Junior high school	0.85 (0.83)	0.59 (0.36)*	-
Senior high school	-	-	0.17 (0.39)
Tertiary	-	0.82 (0.57)	-
Marital status (married = 1)	2.31 (0.69)***	-0.33 (0.29)	0.37 (0.35)
Experience	-0.09 (0.17)	0.07 (0.08)	0.08 (0.09)
Perceptions	0.24 (0.09)***	0.06 (0.05)	0.42 (0.06)***
Institutional factors:			
Credit access	1.78 (0.83)**	0.46 (0.25)*	-0.07 (0.34)
Land access	3.30 (0.70)***	-	-
Extension access	1.85 (0.66)***	-	-
Market access	-0.41 (1.00)	0.82 (0.37)**	2.54 (1.17)**
Constant	-7.77 (1.90)	-0.43 (0.68)	-6.34 (1.47)
LR χ^2 (11)	305.42	80.34	138.13
Prob > χ^2	0.00	0.00	0.00
Pseudo R²	0.79	0.21	0.36
Log-likelihood	-41.85	-155.67	-120.52
No. of observations	284	284	284

Source: field survey 2023. Significance levels in parenthesis; ***, **, and * denote significance at 1%, 5%, and 10% respectively.

Pseudo-R-2. of 0.7849 indicates that the independent variables in the model accounted for approximately 79 percent of the variation in young people's involvement in cassava cultivation. The overall processing logit regression model has a chi-squared value of 80.34, indicating a strong fit, and was statistically significant at the one percent probability level. Pseudo-R-2 of 0.21 indicates that the independent variables accounted for roughly 21% of the variation in youth engagement in cassava processing. Similarly, the marketing total logit regressing model, with a pseudo-R-2 of 0.36 and a chi-squared value of 138.13, was shown to be statistically significant at the one percent probability level. This indicates that about 36% of the variation in youth engagement in cassava marketing was explained by the explanatory factors included in the model.

Gender: Positive but statistically significant at the one percent level was the respondents' gender in cassava production. The result reveals a statistically significant gender disparity in cassava production, with men being more likely to participate than women. This could be because males in the study area are more likely than females to own land which reduces their propensity to engage in farming. Similarly, farming requires more time, money, and labor than other activities, which may explain why fewer young women participate in it. The respondents' gender had a negative but significant impact on processing at the one percent level. The likelihood of a male respondent engaging in cassava processing is lower than that of a female respondent. In a similar vein, the respondents' gender in marketing was negative yet significant at the one percent threshold. This indicates that women are more interested in cassava marketing than men. These findings align with Ng'atigwa *et al.*'s (2020) observation that land ownership and resource access disparities contribute to the underrepresentation of women in farming

activities. Similarly, Akrong and Kotu (2022) noted that farming's high resource requirements deter women's participation in farming activities but rather prefer engaging in processing and marketing activities. These findings underscore the need for targeted interventions addressing gender-based disparities in land ownership, resource access, and farming support to promote inclusive and equitable cassava production.

From the results, the household size carries a positive sign in all the three cassava value chains under study though it only has a significant effect at one percent in the marketing. This means that the household size of the youth increases the probability of the youth participating in any of the three cassava value chains. An increase in the number of people in the household by one person increases the likelihood of participating in cassava marketing. Larger households are more likely to participate in cassava marketing because they are more likely to have a higher dependency ratio. This finding is consistent with the findings of Akrong and Kotu (2022) but contrasts with the findings of Tirra (2017) who found a negative relationship between household size and market participation and argued that they are more likely to consume most of what is produced at the house level, hence reducing their market participation.

Dropping non-significant variables in a logistic regression model is a common practice in statistical analysis to improve model simplicity and interpretability (Hosmer, *et al.*, 2013). Considering the levels of education (junior high school, primary education, senior high school, and tertiary education) in the logit models, they have all not been significant when run together, hence the need to drop some of them. The variable “Primary education” is positive and significant at one percent influencing youth involvement in cassava production. This implies that youth who completed primary

school education are more likely to be involved in cassava production compared with youth who have a high level of education. The variable “Junior high school” is also positive and significant at ten percent. This implies that youth who attained a junior high school level of education are more likely to be involved in cassava processing compared to primary school education, senior high school education, and tertiary education. This suggests that youth who completed primary school view cassava farming as a significant source of income in the research area since it gives them fewer career possibilities than it does for youth who obtain higher education. Youth who have more education have more choices and they opt to work in non-farming activities such as processing, and marketing. Hence very few youths with higher levels of education can be found along the cassava value chain. This result is in line with research by Akong and Kotu (2022) and Muhammad *et al.* (2020), which discovered that youths with higher levels of education are less likely to pursue careers in agribusiness because they believe that agribusiness is a field best left to those with lower levels of education.

For the youth involved in cassava cultivation, marital status is positively correlated and statistically significant at a one percent level. This suggests that youths' engagement in cassava production was positively impacted by marriage and that the likelihood of youths participating increased when the number of married youths increased. Married youth had a higher predicted probability of engaging in cassava cultivation. This may be because marriage entails extra duties, such as a heightened concern for the welfare of the home and food security. This echoes Muhammad *et al.*'s (2020) discovery that married individuals undertake cassava production more due to household obligations. Similar studies by Alabi *et al.* (2024) and Achichi *et al.* (2023) also highlight marital

status as a significant factor in youth agricultural participation. These findings underscore the importance of considering marital status in policies promoting youth engagement in cassava production, leveraging marriage as a motivator for increased participation

Furthermore, the perceptions of the youth about cassava cultivation are positive and significant at one percent. The perception of the youth in cassava marketing is also positive and significant at one percent. For the youth in cassava processing, their perception is positive but insignificant. This implies that youths who perceive cassava farming and marketing as good ventures are more likely to get involved. The findings of Ng'atigwa *et al.* (2020) indicate that youth have positive perceptions of agribusiness, which is consistent with the current findings. Factors shaping these perceptions include education, social networks, media, cultural norms, economic factors, role models, and policy support. Positive perceptions boost motivation, confidence, and informed career choices, fostering innovation and increased participation. To promote youth participation, stakeholders should provide targeted education and training, financial support, media campaigns, mentorship programs, and policy incentives, contributing to food security, unemployment reduction, and poverty alleviation.

Credit access is positive and significant at a five percent probability level for youth participation in production. For the youth participation in cassava processing, access to credit is positive and significant at a ten percent probability level. Youth who have access to credit have an increased probability of participating in cassava production and processing compared with youth who have no access to credit. The finding indicates that access to credit facilities enables the youth to acquire production and processing

inputs for better output. This is in line with the findings of Muhammed *et al.* (2020) and Withanage and Damayanthi (2019) that accessibility to credit could influence rural youth participation in cassava production and processing activities.

The likelihood of youth engaging in cassava production increases with each unit increase in their access to farmland, as evidenced by the positive and significant results at the one percent probability level. Youth involvement in cassava cultivation is more likely to rise as farmland becomes more accessible. Thus, young people living in rural areas may be more or less inclined to engage in cassava farming depending on the availability of farmland. This is in line with studies by Muhammad *et al.* (2020) and Glover *et al.* (2015), which demonstrated that larger farms produce more and enhance the gross income of cassava farmers.

Agricultural extension agents serve as a bridge between farmers and researchers. They act as intermediaries, informing farmers about cutting-edge technologies created by researchers and relaying to the researchers the issues and requirements of farmers. Thus, it is anticipated that a greater number of connections will result in a rise in young people's involvement in cassava cultivation. According to the study, at a one percent level, having access to extension services is beneficial and significant. This suggests that youth's involvement in cassava cultivation rises with the number of extension contacts. Yakubu *et al.* (2019) and Muhammed *et al.* (2020) reported similar findings, demonstrating that a greater number of extension contacts contributed to a rise in youth involvement in cassava cultivation.

Youths' involvement in cassava processing and marketing is positively impacted by market access, with a percent significant degree of significance. This suggests that

participating in value chain enterprises can be improved by having access to the market and knowledge about cassava product markets. The results show that young people who have access to marketplaces are more likely to participate in the processing and sale of cassava than those who do not. Market access may help young people in several ways, including making it easier for them to obtain inputs and distribute them to consumers. The results are consistent with research by August (2020), who found that people's willingness to engage in profitable agricultural activities is significantly influenced by market availability.

The study on youth participation in the cassava value chain aligns with three theoretical frameworks: Push-Pull Theory, Human Capital Theory, and Theory of Planned Behaviour (TPB). Results show that gender, credit access, and land access act as push and pull factors, influencing participation in cassava production, processing, and marketing. Education enhances participation, particularly in production, supporting Human Capital Theory. Perceptions, attitudes, and access to resources also shape decisions, reflecting TPB's relevance. Socio-economic factors like gender, educational level, and marital status significantly impact participation, while institutional factors such as credit access, land access, extension services, and market access play a crucial role. The findings highlight the need for targeted interventions, training programs, and institutional support to boost youth participation in agribusiness, addressing challenges and leveraging opportunities for economic growth and development.

In conclusion, this study reveals that youth have a favorable perception of the cassava value chain indicating a positive view of cassava production, processing, and marketing as profitable ventures contributing to food security, financial independence, and poverty

reduction. Key factors influencing participation include gender (men dominate production, women in processing/marketing), household size (larger households increase marketing participation), education (primary education boosts production participation), marital status (married youth more likely to participate in production), and access to credit, land, extension services, and markets. To enhance youth engagement, targeted interventions addressing gender disparities, policies leveraging marriage, improved access to credit and extension services, education/training programs, and market information are recommended. This study's findings should be considered in light of the following limitations: The sample size may not be representative of the larger population, potentially compromising the generalizability of the results. The study's focus on a specific area limits the findings' applicability to other regions, which may have distinct characteristics.

4.6 Predictions on the Logit Regression

From Appendix 3, logit regression predictions suggest that there is a 97.65% chance that youth in the research area will engage in cassava production. The youth in the study area have a 53.57 percent chance of taking part in cassava processing. In a similar vein, the likelihood that youth in the research area will take part in cassava marketing is 41.28 percent.

4.7 Results of Hypothesis Tested

The null hypothesis is that the means of the percentage of the youth involved in the cassava value chain do not differ significantly from one another. The null hypothesis is rejected in favor of the alternative hypothesis, which states that there is a significant difference in the means of the proportion of youth involvement in the cassava value chain, according to the results of the tests in Appendix 4.

The second null hypothesis proposes that there is no significant difference in the means of the perceptions of the youth in the cassava value chain based on their level of exposure, knowledge, and involvement in the agricultural sector. The t-test result in Appendix 5 showed that the null hypothesis is rejected in favor of the alternative hypothesis that there is a significant difference between the means of the youth's perceptions of the cassava value chain.

The Wald Test for the hypothesis that the explanatory variables in the logistic models had no meaningful impact on the youth's involvement in the cassava value chain is presented in Table 4.13.

Table 4.13 Wald Test of the Hypothesis of the Explanatory Variables in the Logit Model.

Cassava Value Chain	Hypothesis	Decision
Production	$H_0: \beta_0 = \beta_1 = \beta_2 \dots \beta_n = 0$ $H_1: \beta_0 \neq \beta_1 \neq \beta_2 \dots \beta_n \neq 0$	Rejected
Processing	$H_0: \beta_0 = \beta_1 = \beta_2 \dots \beta_n = 0$ $H_1: \beta_0 \neq \beta_1 \neq \beta_2 \dots \beta_n \neq 0$	Rejected

Marketing	$H_0: \beta_0 = \beta_1 = \beta_2 \dots \beta_n = 0$ $H_1: \beta_0 \neq \beta_1 \neq \beta_2 \dots \beta_n \neq 0$	Rejected
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The variables impacting youth's involvement in the cassava value chain are significantly correlated. This demonstrated that the youth's involvement in the cassava value chain can be statistically explained by the combined influence of the explanatory variables that the logistic models predicted. Consequently, the null hypotheses are rejected.



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary and overview of the study's key findings from the previous chapter. Policy recommendations for further development initiatives are provided in light of the study's findings.

5.2 Summary of the Study

This study aims to assess youth's participation in the cassava value chain in the Upper West Akim District of Ghana. Specifically, to analyze the proportion of the youth involved in the cassava value chain, describe the activities involved in each of the cassava value chains, describe the perceptions of the youth toward the cassava value chain, and estimate the factors influencing the youth's participation in each of the cassava value chains. To analyze the proportion of the youth participating in the cassava value chains, a bar chart was used to show the distribution of the youth along the value chain, percentages were used to represent the gender distribution of the youths along the value chain, and a Five-Likert scale used to rank statements about the level of participation in the value chain. Simple percentages are used to describe and rank the activities that the youth engaged in along the cassava value chain. From a Five-Likert scale, descriptive analysis was used to ascertain the youth's perception of the cassava value chain. To estimate the factors influencing the youth's participation, logistic regression was used to determine the variation of the dependent variable explained by the independent variables and to identify the relative importance of individual

predictors. The area selected for this study is the Upper West Akim district in the Eastern region of Ghana. The study employed the basic descriptive tools to analyze the proportion of the youth that are involved in the cassava value chain, to describe the activities within the value chain that the youth are involved in, describe the perceptions of the youth toward the cassava value chain, and the use of logistic regression model to estimate the factors influencing the youths' participation in the cassava value chain. Variations in the youth' involvement in the value chain were explained by the independent factors' combined influence. In the research area, cross-sectional data on 284 young farmers was gathered. The raw data gathered from the field survey was analyzed using STATA 14 and Excel software.

5.3 Conclusions

From the results, the youth actively engage in many activities along the cassava value chain. For cassava production, the youth are most actively engaged in land preparation, planting of cassava, and weed control. The most actively participating activities in cassava processing are cassava peeling, gari roasting, and grating /grinding. For cassava marketing, the most actively participated activities are gari marketing, fresh cassava marketing, and cassava dough marketing. This implies that if the youth are well-resourced with modern technology to enhance their activities along the value chain, their participation can further increase.

The findings of the perceptions index indicate that youth in the research area have favorable opinions of the cassava value chain. This implies that if the youth are provided with the necessary market information and resources, they will be interested in getting

involved more in the cassava value chain, acquiring more skills and knowledge to promote their activities along the value chain, and will be unwilling to exit.

The results of an analysis of the percentage of young people involved in the cassava value chain indicate that most of the young people are more actively involved in the cultivation of cassava than in its processing and marketing, and they are also curious to try out new varieties. This would suggest that the young people in the research region do not have the processing and entrepreneurial abilities necessary to process and market cassava more extensively.

The results also show that youth participation in cassava production is significantly influenced by gender, primary education, marital status, perceptions, credit access, land access, and extension access. Gender (negative), junior high school education, credit access, and market access significantly influence youth participation in cassava processing. Gender (negative), household size, perceptions, and market access have a significant influence on youth participation in cassava marketing. With gender, it implies that the males are willing to participate more in cassava production while the females are more interested in participating in cassava processing and marketing.

Regarding education, it indicates that young people who have completed some kind of schooling are more likely to embrace and take part in the activities associated with the cassava value chain. The findings also suggest that youth involvement in the cassava value chain is positively impacted by market, credit, land, and extension access.

5.4 Recommendations

Modern technologies should be made available and accessible to all the youth to make cassava farming and processing activities easier. Agritech startups can make modern technologies, such as mobile-based market linkage services, more accessible to youth in rural areas. They can also provide digital training resources on best farming practices and offer mobile credit options.

There is a need to promote industrialization in the district. The study advocates for the completion of the Mepom Cassava Processing Factory under the one-district-one factory presidential initiatives which is currently underway in the study area. There should be acknowledgment of successful youth in the cassava value chain, producer incentives, and assistance in arranging lucrative markets. Private companies and processors can partner with local governments to source cassava from young farmers and provide a stable market.

There is a need to intensify training of the youth through more training programs that focus on modern farming practices, value addition, and entrepreneurship. The universities could collaborate with MoFA and non-profits to deliver youth-focused agricultural entrepreneurship programs, supporting youth interested in cassava farming and processing.

There is a need to widen the availability and accessibility of cassava varieties, farmlands, credit, markets, and extension services to increase their participation in the cassava value chain. Agricultural extension services should be revamped by resourcing the institution and employing more agents. Financial institutions, or microcredit providers, must be encouraged to offer loans to young people at interest rates that the

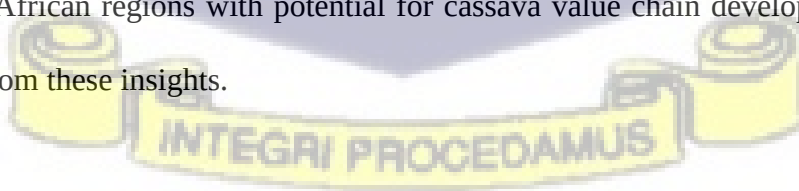
young people can afford. The government can set aside land specifically for youth projects. Implement a land rental subsidy program to reduce the financial burden of land rental costs for the youth farmers.

5.5 Future Studies and Interventions

Future studies can investigate the impact of modern technologies on youth participation, evaluate the effectiveness of training programs, and analyze the role of gender in cassava production, processing, and marketing. Additionally, research can assess the effects of industrialization on youth employment and economic growth, and examine the efficiency of agricultural extension services.

In terms of interventions, policymakers can implement policies to increase access to modern technologies, credit, and markets for youth farmers. Establishing training programs focused on cassava value addition and entrepreneurship can also promote youth participation. Furthermore, promoting gender-sensitive initiatives can enhance female participation in cassava production.

The study's findings are relevant to other districts in Ghana with similar agricultural profiles, as well as West African countries with significant cassava production. Sub-Saharan African regions with potential for cassava value chain development can also benefit from these insights.



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APPENDICES

Appendix 1: Multi-Collinearity Test

Variance Inflation Factor (VIF) for Production

Variable	VIF	1/VIF
Perception	1.66	0.600788
Gender	1.55	0.646749
Market access	1.50	0.668818
Primary education	1.35	0.738935
Extension service access	1.24	0.803233
Marital status	1.21	0.823534
Land access	1.20	0.831862
Junior high school education	1.14	0.878893
Experience	1.13	0.884447
Credit access	1.09	0.918105
Household size	1.06	0.942456
Mean VIF	1.29	

Variance Inflation Factor (VIF) for Processing

Variable	VIF	1/VIF
Perception	1.41	0.707728
Market access	1.37	0.731272
Experience	1.13	0.881772
Gender	1.13	0.884317
Tertiary education	1.11	0.900871
Marital status	1.08	0.922936
Household size	1.07	0.937275
JHS education	1.05	0.952879
Credit access	1.01	0.985985
Mean VIF	1.15	

Variance Inflation Factor (VIF) for Marketing

Variable	VIF	1/VIF
Perception	1.27	0.787871
Market access	1.25	0.800323
Experience	1.23	0.813147
Gender	1.18	0.844961
Tertiary education	1.15	0.867408
Marital status	1.13	0.887550
Household size	1.05	0.947975
JHS education	1.05	0.951712
Mean VIF	1.16	

Appendix 2: Pearson Correlation Test Matrix

Production Test

	production	gender	household	prim	jhs	marital	experi	percept	credit
mketacc									
extens									
landaccess									
production	1.0000								
gender	0.7075	1.0000							
hsehold	0.0277	0.0015	1.0000						
prim ed	0.3722	0.2580	-0.0574	1.0000					
JHS	0.0026	-0.0054	0.0498	-0.2974	1.0000				
Marital	0.3639	0.1717	-0.0872	0.2516	-0.0088	1.0000			
experi	0.1050	0.1183	0.1571	-0.0633	0.0335	0.1431	1.0000		
percept	0.5870	0.4974	0.1052	0.2908	-0.0201	0.2500	0.2312	1.0000	
credit	0.3220	0.2331	-0.0427	0.0688	0.0253	0.1322	0.0948	0.1703	1.0000
market	0.4780	0.4152	0.0384	0.2601	0.0817	0.2574	0.1590	0.4802	0.2114
0.2114	1.0000								
extens	0.4892	0.3404	0.0362	0.1216	0.0477	0.2590	0.1139	0.2455	0.1253
0.1964	1.0000								
land	0.4448	0.2185	0.0124	0.2024	-0.0211	0.1360	0.1366	0.3060	0.1173
0.2876	0.2694	1.0000							

Processing Test

	Production	gender	household	jhs	tert	marital	experience	perception	credit
marketaccess									
processing	1.0000								
gender	-0.4245	1.0000							
household	-0.0223	0.0015	1.0000						
jhs	0.0860	-0.0054	0.0498	1.0000					
tert	0.1936	-0.2262	-0.0559	-0.1422	1.0000				
marital	-0.1400	0.1717	-0.0872	-0.0088	-0.1349	1.0000			

experience	0.0200	0.1183	0.1571	0.0335	-0.0510	0.1431	1.0000		
perception	0.2141	-0.1662	0.1732	-0.0267		0.0858	-0.0708	0.2259	1.0000
creditaccess	0.1148	0.0488	0.0036	-0.0256		0.0663	-0.0411	0.0135	0.0258
1.0000									
marketaccess	0.2521	-0.1437	0.0611	0.1058	0.1211	-0.1051	0.1597	0.4823	0.0574
1.0000									

Marketing Test

	marketing	gender	household	shs	tert	marita	experience	perception	credit
marketing	1.0000								
gender	-0.3316	1.0000							
Household	0.0993	0.0015	1.0000						
shs	0.2215	-0.2882	0.0666	1.0000					
tert	0.0024	-0.2262	-0.0559	-0.1794	1.0000				
marital	-0.0207	0.1717	-0.0872	-0.3357	-0.1349	1.0000			
experience	0.0895	0.1183	0.1571	-0.0147	-0.0510	0.1431	1.0000		
perception	0.5574	-0.1779	0.1508	0.2645	-0.0151	-0.0700	0.2583	1.0000	
credit		-0.0341	0.3004	0.0090	-0.1084	-0.0914	0.1067	0.1148	0.0500
1.0000									
market	0.1971	-0.1188	0.0467	0.0492	0.0839	-0.1142	0.0577	0.1624	0.0436
1.0000									

Appendix 3: Predictions on the Logit Regression

$$\text{Prediction} = \frac{e^{X'B}}{1 + e^{X'B'}}$$

Prediction on Youth Participation in Cassava Production:

$$X'B = -7.77 + 4.53\text{Gender}(\text{male}=1) + 0.07\text{Household size} + 2.49\text{Primary Edu.} + 0.85\text{JHS Edu.} + 2.31\text{Marital status} - 0.09\text{Experience} + 0.24\text{Perception} + 1.78\text{Credit access} + 3.30\text{Land access} + 1.85\text{Extension access} - 0.41\text{Market access} + \varepsilon_i$$

$$X'B = -7.77 + 4.53(0.86) + 0.07(5.82) + 2.49(0.43) + 0.85(0.19) + 2.31(0.77) - 0.09(6.36) + 0.24(1.05) + 1.78(0.48) + 3.30(0.88) + 1.85(0.75) - 0.41(0.95) = 3.7281$$

$$\text{Prediction} = \frac{e^{3.7281}}{1 + e^{3.7281}} = 0.9765$$

Prediction on Youth Participation in Cassava Processing:

$$X'B = -0.43 - 1.77\text{Gender}(\text{male}=1) - 0.08\text{Household size} + 0.59\text{JHS Edu.} + 0.82\text{Tertiary Edu} - 0.33\text{Marital status} + 0.07\text{Experience} + 0.06\text{Perception} + 0.46\text{Credit access} + 0.82\text{Market access} + \varepsilon_i$$

$$X'B = -0.43 - 1.77(0.32) - 0.08(5.73) + 0.59(0.22) + 0.82(0.14) - 0.33(0.54) + 0.07(6.23) + 0.06(0.89) + 0.46(0.75) + 0.82(0.85) = 0.1431$$

$$\text{Prediction} = \frac{e^{0.1431}}{1 + e^{0.1431}} = 0.5357$$

Prediction on Youth Participation in Cassava Marketing:

$$X'B = -6.34 - 1.44\text{Gender}(\text{male}=1) + 0.18\text{Household size} + 0.17\text{SHS Edu} - 0.37\text{Marital status} + 0.08\text{Experience} + 0.42\text{Perception} - 0.07\text{Credit access} + 2.54\text{Market access} + \varepsilon_i$$

$$X'B = -6.34 - 1.44(0.75) + 0.18(7.60) + 0.17(0.55) - 0.37(0.60) + 0.08(7.40) + 0.42(1.41) - 0.07(0.44) + 2.54(0.99) = -0.3525$$

$$\text{Prediction} = \frac{e^{-0.3525}}{1 + e^{-0.3525}} = 0.4128$$

Appendix 4: Paired t-test

Production and processing test result

Variable	Mean	Standard error	Standard dev.
Production	.5633803	.0294822	.4968422
Processing	.4577465	.0296156	.4990909
Difference	.1056338	.050236	.8465916

t = 2.1028 degrees of freedom = 283

Ho: mean(diff) = 0 Ha: mean(diff) > 0 Pr(T > t) = 0.0182

Production and marketing test result

Variable	Mean	Standard error	Standard dev.
Production	.5633803	.0294822	.4968422
Marketing	.3873239	.0289574	.4879986
Difference	.1760563	.0413247	.777777

t = 3.8147 degrees of freedom = 283

Ho: mean(diff) = 0 Ha: mean(diff) > 0 Pr(T > t) = 0.0001

Processing and marketing test results

Variable	Mean	Standard error	Standard dev.
Processing	.4577465	.0296156	.4990909
Marketing	.3873239	.0289574	.4879986
Difference	.0704225	.0387352	.6527776

t = 1.8180 degrees of freedom = 283

Ho: mean(diff) = 0 Ha: mean(diff) > 0 Pr(T > t) = 0.0351

Appendix 5: Paired t-test (Perceptions)

Production and processing perceptions test result

Variable	Mean	Standard error	Standard dev.
Prodn percept	4.302817	.215369	3.629462
Processing percept	5.080986	.2069783	3.48806
Difference	-.778169	.2407143	4.056589

t = -3.2327 degrees of freedom = 283

Ho: mean(diff) = 0 Ha: mean(diff) < 0 Pr(T < t) = 0.0007

Production and marketing perceptions test result

Variable	Mean	Standard error	Standard dev.
Prodn percept	4.302817	.215369	3.629462
Marketing percept	4.883803	.2195233	3.699473
Difference	-.5809859	.2514364	4.237281

t = -2.3107 degrees of freedom = 283

Ho: mean(diff) = 0 Ha: mean(diff) < 0 Pr(T < t) = 0.0108

Processing and marketing perceptions test result

Variable	Mean	Standard error	Standard dev.
Processing percept	5.080986	.2069783	3.48806
Marketing percept	4.883803	.2195233	3.699473
Difference	.1971831	.1359267	2.290677

t = 1.4507 degrees of freedom = 283

Ho: mean(diff) = 0 Ha: mean(diff) < 0 Pr(T < t) = 0.9260

Appendix 6: CORRELATION MATRIX**Production**

	participat~n	Househ~d	Gender	Educat~l	marital~s	Yearsof~e	credit~s	market~s	extens~s	percep~n	Farmsize
participat~n	1.0000										
Household	0.1253	1.0000									
Gender	0.2575	-0.0821	1.0000								
Educational	-0.5965	-0.0917	0.0465	1.0000							
marital~s	0.3272	0.0166	0.1153	-0.2137	1.0000						
Yearsofexp~e	0.1007	0.2033	-0.0075	-0.1795	-0.0204	1.0000					
creditaccess	0.4911	0.0532	0.0917	-0.3321	0.1159	0.0461	1.0000				
marketaccess	0.4957	0.0728	0.1142	-0.2903	0.3066	-0.0163	0.3912	1.0000			
extensiona~s	0.0806	-0.0158	0.0730	-0.1133	-0.0497	0.2022	0.3130	0.0707	1.0000		
perception	0.7401	0.0843	0.1871	-0.4250	0.1993	0.1208	0.4036	0.4673	0.0423	1.0000	
Farmsize	0.6027	0.1236	0.1044	-0.4115	0.1736	0.2256	0.3348	0.3143	0.1014	0.4748	1.0000

Processing

	participat~n	Househ~d	Gender	Educate~l	Marital~s	Experi~e	credit	market~o	Percep~n
participat~n	1.0000								
Household	0.0071	1.0000							
Gender	-0.3065	-0.0001	1.0000						
Educational	-0.2211	0.0065	-0.0036	1.0000					
Marital_St~s	0.1605	-0.0902	-0.1175	-0.1740	1.0000				
Experience	0.1761	0.0484	0.2137	-0.0840	0.2944	1.0000			
credit	0.3478	0.0509	-0.1881	-0.0406	0.1084	0.1453	1.0000		
market_info	0.3298	-0.0743	-0.0049	-0.1391	0.0636	0.0028	0.1366	1.0000	
Perception	0.2291	-0.0703	-0.0526	-0.0839	0.0132	0.1551	0.2648	0.1694	1.0000

Marketing

	participat~n	Househ~d	Gender	Educate~l	Marital~s	experi~e	credit	market~o	percep~n
participat~n	1.0000								
Household	0.3578	1.0000							
Gender	-0.4759	-0.0814	1.0000						
Educational	-0.4348	-0.0916	0.1804	1.0000					
Marital_St~s	0.0415	-0.0733	-0.1516	-0.0831	1.0000				
experience	0.3645	0.2729	-0.1923	-0.1810	0.0905	1.0000			
credit	0.3912	0.0998	-0.1912	-0.1052	0.0496	0.2816	1.0000		
marketinfo	0.1325	0.0342	-0.1111	-0.0325	-0.0954	-0.1536	-0.0372	1.0000	
perception	0.0388	0.1383	0.1036	-0.0131	0.0466	0.0936	0.0153	-0.1119	1.0000



UNIVERSITY OF GHANA

DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS

YOUTH PARTICIPATION IN THE CASSAVA VALUE CHAIN IN THE UPPER WEST

AKIM DISTRICT, EASTERN REGION, GHANA

QUESTIONNAIRE

This study aims to obtain opinions, views, experiences, and suggestions regarding the cassava value chain. The questionnaire is meant to collect data on youth (18 – 35 years) participation in cassava farming, processing, and marketing. Information obtained in the process is strictly for academic purposes only. Responses obtained will be treated with confidentiality and will not be released to the public without the respondent's consent. This interview is voluntary and will take a few minutes to complete. Your participation will be highly appreciated.

Section A. Respondents Socio-Economic Characteristics

1. Name of respondent
2. Age of respondent 1 = 18 – 23 [] 2 = 24 – 29 [] 3 = 30 – 35 []
3. What is your total household size?.....
4. Sex of respondent 1 = Male [] 0 = Female []
5. What is your highest level of education? 0 = None [] 1 = Primary [] 2 = JHS/Middle school
[] 3 = Secondary [] 4 = Tertiary []
6. What is your marital status? 0 = Single [] 1 = Married []

Section B: Questions on cassava value chains

7. In which of the following cassava value chains do you participate? 1 = production []

2 = processing [] 3 = marketing

Cassava Production

8. Is cassava farming your primary occupation? 1 = Yes [] 0 = No []

9. If yes, which cassava production activities are you involved in? 1 = Land preparation []

2 = Planting of cassava [] 3 = Weed control [] 4 = Fertilizer application []

5 = Pests/diseases control [] 6 = Cassava harvesting [] 7 = Others (specify).....

10. If No, what is your main occupation? 1 = Crop farming [] 2 = Public/Civil servant []

3 = Self-employed [] 4 = Others (specify).....

11. What is your number of years of producing cassava?.....years

12. What is your major reason for farming cassava? 1 = Personal use [] 2 = Commercial purpose [] 3 = Others (specify)..... 4 = Both personal & commercial purposes []

13. How do you prepare your land for crop production? 1 = Tractor [] 2 = Hoe/cutlass [] 3 = Weedicide [] 4 = Others (specify).....

14. What is the total current area under crop production in acres? Acres

1 = < 0.5 acre [] 2 = >0.5 - 1 acre [] 3 = >1 - 2 acres [] 4 = >2 acres []

15. What is the total current area under cassava farming in acres? Acres

1 = < 0.5 acre [] 2 = >0.5 - 1 acre [] 3 = >1 - 2 acres [] 4 = >2 acres []

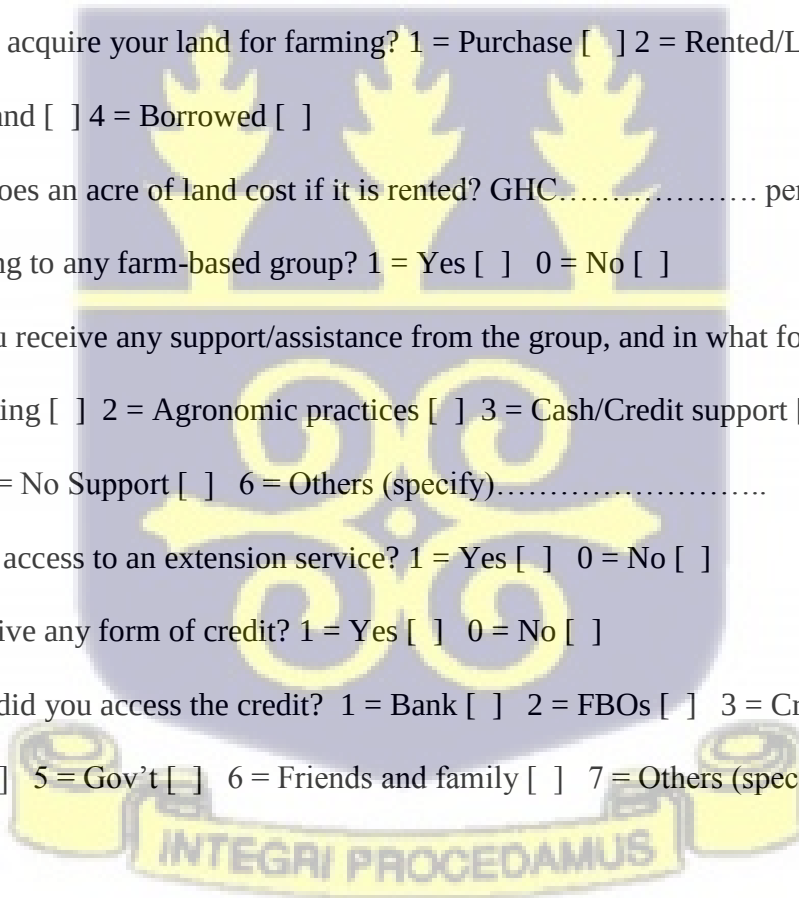
16. Do you intercrop cassava? 1 = Yes [] 0 = No []

17. If Yes, please, indicate the crop(s) you intercrop with cassava

18. Do you use fertilizer or manure on cassava? 1 = Yes [] 0 = No []

19. If yes, which one do you apply? 1 = Fertilizer [] 2 = Manure [] 3 = Both []

20. Where do you source your cassava planting material? 1 = Local market [] 2 = Own seed []
3 = Neighbors [] 4 = Others (specify).....
21. How reliable is the source? 1 = Extremely reliable [] 2 = Moderately [] 3 = Low []
22. Do you have access to enough farmland for your cassava farming? 1 = Yes [] 0 = No []
23. Do you have access to the market for your cassava? 1 = Yes [] 0 = No []
24. Which disease/pest control practices do you use? 1 = Hand control [] 2 = Chemical control [] 3 = Crop rotation [] 4 = None [] 5 = Others (specify).....
25. What is the major source of labor employed on your farm? 1 = Family labor [] 2 = Hired labor [] 3 = Both family & hired labour []
26. How did you acquire your land for farming? 1 = Purchase [] 2 = Rented/Lease []
3 = Family land [] 4 = Borrowed []
27. How much does an acre of land cost if it is rented? GHC..... per acre.
28. Do you belong to any farm-based group? 1 = Yes [] 0 = No []
29. If yes, do you receive any support/assistance from the group, and in what form? 1= Book-keeping training [] 2 = Agronomic practices [] 3 = Cash/Credit support [] 4= Input supply [] 5 = No Support [] 6 = Others (specify).....
30. Do you have access to an extension service? 1 = Yes [] 0 = No []
31. Did you receive any form of credit? 1 = Yes [] 0 = No []
32. From where did you access the credit? 1 = Bank [] 2 = FBOs [] 3 = Credit union []
4 = NGOs [] 5 = Gov't [] 6 = Friends and family [] 7 = Others (specify).....



Please indicate by ticking (✓) your level of involvement in the following cassava production

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
33 I actively engage in cassava cultivation					
34 I have enough land to expand my cassava production					
35 I expand my cassava farm each year					
36 I engage hired labor to weed and harvest my cassava					
37 I sell all/most of my cassava output					
38 I want to exit cassava production					
39 I want to explore new cassava varieties					

Cassava processing

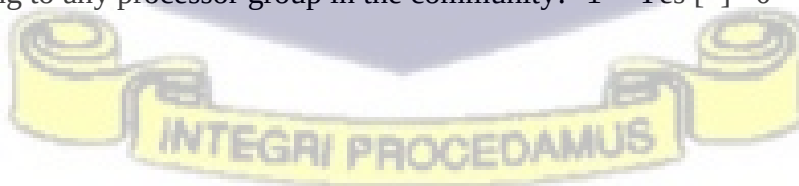
40. Is cassava processing your primary occupation? 1 = Yes [] 0 = No []

41. If yes, which cassava processing activities are you involved in? 1 = Harvesting [] 2 = peeling [] 3 = Grating/Grinding [] 4 = Fermentation [] 5 = Drying [] 6 = Milling [] 7 = packaging [] 8 = Others (specify).....

42. If No, what is your main occupation? 1 = Crop farming [] 2 = Public/Civil servant [] 3 = Self-employed [] 4 = Others (specify).....

43. What is your number of years of processing cassava?.....years

44. What is your major reason for processing cassava? 1=Personal use [] 2=Commercial use []
3 = Both personal & commercial use [] 4 = Others (specify).....
45. Did you receive any form of credit to support your work? 1 = Yes [] 0 = No []
46. From where did you access the credit? 1 = Bank [] 2 = FBOs [] 3 = Credit union []
4 = NGOs [] 5 = Gov't [] 6 = Friends and family [] 7 = Others (specify).....
47. How do you source cassava for processing? 1 = Own cassava farm [] 2 = Local farmers []
3 = Cassava market [] 4 = Other sources (specify).....
48. Which cassava products do you produce? 1 = Flour [] 2 = starch [] 3 = Garri []
4 = Fufu [] 5 = Chips [] 6 = Others (specify).....
49. Do you have access to the market for your cassava products? 1 = Yes [] 0 = No []
50. How do you market your cassava product? 1 = Local market [] 2 = Wholesalers []
3 = Direct to consumers [] 4 = Export markets [] 5 = Others (specify)
51. What equipment or tools do you need for processing? 1 = Grater [] 2 = fermentation
container [] 3 = Drying machine [] 4 = Cassava press [] 5 = Roasting pan/oven []
6 = Grinding machine [] 7 = Others (specify).....
52. Are you aware of any food safety and quality standards? 1 = Yes [] 0 = No []
53. If yes, are you currently following those standards in your cassava processing operations?
1 = Yes [] 0 = No []
54. Do you belong to any processor group in the community? 1 = Yes [] 0 = No []



Please indicate by ticking (✓) your level of involvement in the cassava processing

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
55 I actively engage in cassava processing					
56 I participate in developing cassava-based products					
57 I have enough knowledge and skills in cassava processing					
58 I am interested in improving my knowledge and skills in cassava processing					
59 I engage hired labor to help in processing cassava					
60 I need financial support to enhance cassava processing					
61 I plan to be more in cassava processing activities in the future					

Cassava marketing

62. Is cassava marketing your primary occupation? 1 = Yes [] 0 = No []

63. If yes, which cassava marketing activities are you involved in? 1 = Input marketing []

2 = Fresh cassava marketing [] 3 = Flour marketing [] 4 = Starch marketing [] 5 = Gari

marketing [] 6 = Cassava peels marketing [] 7 = Cassava dough marketing []

8 = Others (specify).....

64. If No, what is your main occupation? 1 = Crop farming [] 2 = Public/Civil servant []

3 = Self-employed [] 4 = Others (specify).....

65. What is your number of years of marketing cassava?.....years

66. Did you receive any form of credit to support your trading? 1 = Yes [] 0 = No []

67. If yes, from where did you access the credit? 1 = Bank [] 2 = FBOs [] 3 = Credit union []

4 = NGOs [] 5 = Gov't [] 6 = Friends and family [] 7 = Others (specify).....

68. How do you source cassava for marketing? 1 = Own cassava farm [] 2 = Local farmers []

3 = Cassava market [] 4 = Other sources (specify).....

69. Which platform do you primarily use for cassava marketing? 1 = Local markets []

2 = Wholesale buyers [] 3 = Exporters [] 4 = Others (specify).....

70. How do you determine the price of your cassava product? 1 = Negotiation [] 2 = By the

market [] 3 = The farmer [] 4 The buyer [] 5 = Others (specify).....

71. When your cassava or cassava products are ready, do you sometimes find it difficult to get a

buyer? 1 = Yes [] 0 = No []

72. If yes, what causes such situations? 1 = inaccessibility of market [] 2 = lack of market

information [] 3 = low price offered [] 4 = Others (specify).....

73. During which period of the year do cassava tubers fetch the highest price?.....

74. What is the mode of transaction payment for the cassava or cassava product?

1 = cash sales [] 2 = credit sales [] 3 = both []

75. If it's credit sales, how long does it take before you are paid? days

76. Does any of your harvested cassava go waste /spoil? 1 = Yes [] 0 = No []

77. If yes, what is the main cause of this spoilage? 1 =Mechanical damage [] 2=Overstaying []
3 = pests and diseases [] 4 = Others (specify)

78. How do you transport the cassava or the cassava products? 1 = trekking [] 2 = trucking []
3 = Both [] 4 = No transport []

Please indicate by ticking (✓) your level of involvement in the cassava marketing

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
79 I actively engage in cassava marketing					
80 I engage hired labor to help in marketing cassava					
81 I am satisfied with my current marketing channels					
82 I need financial support to enhance cassava marketing					
83 I perceive the prospects of cassava marketing as promising					
84 I am ready to explore any innovation to enhance cassava marketing					

Section C. Perceptions of the Youth in the Cassava Value Chain

Please indicate your level of agreement with the following statements

Production Statement		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
85	I am interested in getting involved in cassava production					
86	Cassava production is not a profitable venture for the youth					
87	I believe that cassava production can contribute to food security					
88	I perceive cassava production as a too much labor-intensive activity					
89	I preferred white-collar jobs to the cassava cultivation					
90	I believe that promoting cassava production among the youth can help reduce the unemployment rate					
91	I perceive cassava cultivation as a means of achieving financial independence and reducing poverty					
92	Financial and extension support will encourage rural youth participation					
Processing Statement						

93	I see cassava processing as a source of income generation.					
94	Cassava processing is a low-value/prestige activity					
95	Cassava processing is a dirty and physically demanding activity					
96	Cassava processing can lead to value addition and product diversification.					
97	I am interested in acquiring skills and knowledge related to cassava processing					
98	Access to finance, training, and market information can help promote cassava processing activities					
Marketing Statement						
99	I perceive cassava as a profitable crop with high market demand and a viable source of income					
100	Cassava marketing provides valuable opportunities for youth entrepreneurship					
101	Marketing of cassava products is adequately promoted in our area.					

102	I am adequately informed about the benefits and potential of cassava marketing					
103	Marketing channels for cassava products are easily accessible for young farmers					
104	Sufficient training and capacity-building programs will boost my interest in cassava marketing activities					

Section D. Factors influencing youth's participation in the cassava value chain.

To what extent do you agree or disagree with the following?

Production Constraint		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
105	Lack of access to quality inputs					
106	High input prices					
107	Limited or lack of cassava farming knowledge and skills					
108	Lack of access to adequate land					
109	Limited access to credit/finance					
110	Too high a labor cost					
111	Poor rainfall distribution					
112	High incidence of pests/diseases					

113	Severe incidence of sand mining					
114	Poor output prices					
115	Lack of modern technology to make cassava farming easier					
116	Limited access to market					
117	Poor agricultural extension services					
Processing Constraint						
118	Limited or lack of cassava processing knowledge and skills					
119	High cost of raw cassava					
120	Inadequate storage facilities					
121	High transport cost					
122	Poor market information					
123	Limited market					
124	High processing cost					
125	Lack of processing facilities					
126	Poor output prices					
127	Cassava processing is seen as a low-status occupation					
128	Unavailability of raw cassava					
129	Cassava processing is viewed as a women's activity					
Marketing Constraint						

130	Lack of readily available market					
131	Poor transportation network					
132	High transport cost					
133	Lack of support from the government					
134	Inadequate storage facilities					
135	Low market prices					
136	Limited access to credit					

