Socioeconomic impacts of rapoko production on the empowerment and livelihoods of the marginalized groups.

A dissertation submitted in partial fulfilment of the requirements for the Master of Science Degree in Food Security and Policy Making

Bindura University of Science Education

Faculty of Agriculture and Environmental Science

Department of Agricultural Economics, Education and Extension

Gungurukwa Moses

(B1851266)

Supervisor: Dr V. Munyati

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Name of supervisor: Dr V. Munyati

Signature: 

Date: 15/10/2025

Chairman: Dr N Mafuse

Signature: 

Date: 17 October 2025

DECLARATION

I hereby declare that the research project entitled "**Socioeconomic impacts of rapoko production on the empowerment and livelihoods of the marginalized groups**" submitted to Bindura University of Science Education, Department of Agricultural Economics, Education and Extension is a record of an original work done by me under the guidance and supervision of **Dr V. Munyati** and this work is submitted in partial fulfilment of the requirements for the award of a Master of Science Degree in Food Security and Sustainable Agriculture. The results embodied in this thesis have not been submitted to any University or Institute for the award of any degree of diploma.

Author: Gungurukwa Moses
Reg Number: B1851266
Signature:
Date:

DECLARATION

The undersigned certify that they have read the research project and have approved its submission for marking in relation to the department's guidelines and regulations.

Student: Moses Gungurukwa

Signature:

Date: 20/6/2025

Supervisor: Dr V Munyati

Signature:

Date:

Chairperson: Dr Never Mafuse

Signature:

Date:

DEDICATION

I dedicate this work to the Lord Almighty, myself and my family. It was hard work, perseverance, learning, studying, sacrifice, and most of all praying!

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My family, friends and classmates, thank you!

ABSTRACT

This study examined the socioeconomic impacts of rapoko production on the empowerment and livelihoods of marginalized groups. It research employed a mixed-methods design, integrating quantitative and qualitative approaches, with a sample of 130 respondents chosen via convenience sampling. Data collection involved surveys and interviews, and the data was analysed using a combination of descriptive statistics, ordinary least squares regression, and generalized propensity score analysis. The results showed that rapoko production contributes significantly to the empowerment of marginalized groups, with moderate to high levels of empowerment across various indicators. Regression analysis revealed that rapoko output, secondary education, extension services, social capital, and access to credit were significant positive determinants of empowerment. The study also discovered that increasing rapoko production significantly improves livelihoods and income generation, with every unit increase in rapoko output corresponding to a 0.05 unit rise in livelihoods and income. The study also explored the cultural significance of rapoko production, revealing that it symbolizes resilience, adaptability, and cultural heritage, while promoting social cohesion and community identity. The findings suggest that investing in agricultural productivity-enhancing interventions, such as extension services, access to credit, and market access have a direct and positive impact on household income and well-being. The study recommends prioritizing support for rapoko production to promote empowerment, livelihoods, and income generation among marginalized groups.

Key words: Marginalized groups, livelihoods, empowerment

LIST OF ACRONYMS AND ABBREVIATIONS

CSF	Cultural Significance Framework
CT	Cultural Theory
DV	Dependent Variable
ET	Empowerment Theory
FT	Feminist Theory
GMB	Grain Marketing Board
GPS	Generalized Propensity Score
IV	Independent Variable
LT	Livelihood Theory
ME	Marginal Effects
OLS	Ordinary Least Squares
PYD	Positive Youth Development

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CHAPTER 1: INTRODUCTION

1.1 Background

According to Opole (2019), rapoko is grown in over 25 countries worldwide, with India, Nepal, and Uganda being among the top producers. India is the largest producer of finger rapoko, accounting for over 50% of global production, with approximately 1.8 million tons produced in 2020 (Thakur, 2023). Nepal produced around 290,000 tons of rapoko in 2018, mainly in the hilly regions where it is used to make traditional products (Opole, 2019). Uganda also significantly contributes to global production, with around 430,000 tons produced in 2018 which is concentrated in the eastern and northern parts of the country (Opole, 2019).

India's rapoko production output is led by Karnataka, accounting for 68.55% of the country's production with 1286.03 thousand tonnes, followed by Tamil Nadu with 14.44% (321.29 thousand tonnes), and Uttarakhand with 6.50% (140.8 thousand tonnes) and the country produces a total of around 1998.36 thousand tons of rapoko (Rajesh & Ramachandra, 2024; Thakur, 2023). Other significant rapoko-producing states in India include Andhra Pradesh with 44.7 thousand tonnes (1.98% of total production), Odisha with 32.7 thousand tonnes (1.65% of total production), and West Bengal with 13.56 thousand tonnes (0.32% of total production).

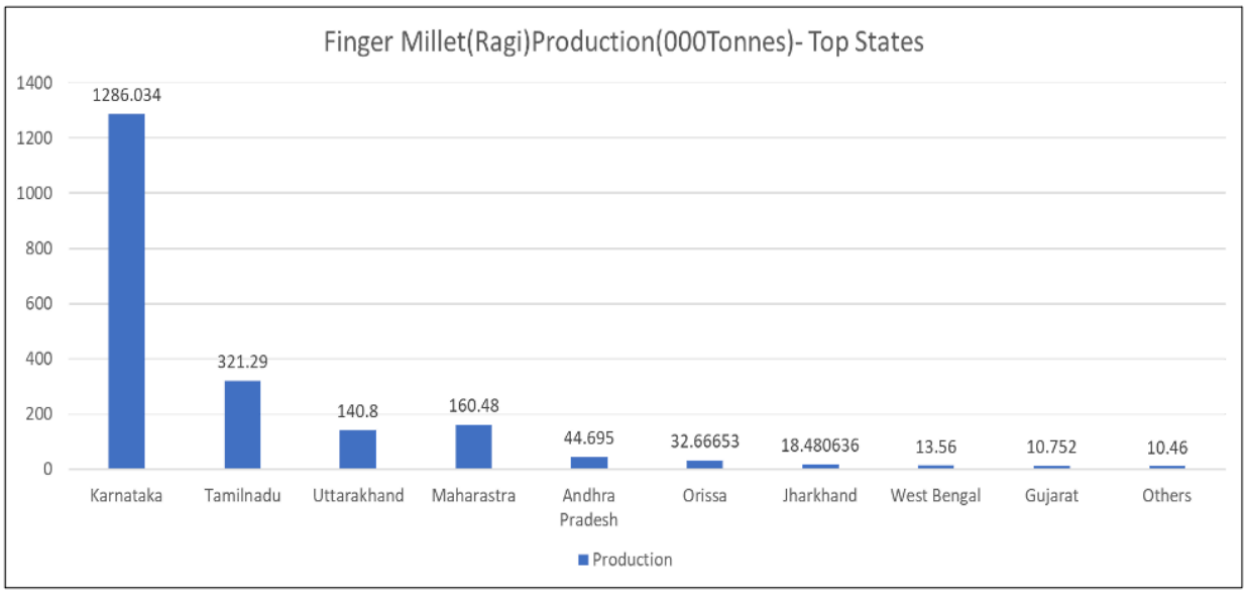


Figure 1.1; Depicts graphs showing state wise production of rapoko in Tons
Source; Rajesh & Ramachandra, 2024

In Africa, rapoko plays a significant role in the cultural heritage of many communities. Rapoko is often used in traditional ceremonies and rituals which highlights its importance beyond its food value.

According to Ramashia et al. (2021), rapoko is utilized in a range of culinary preparations, including porridges, bread, and fermented beverages. In East Africa, particularly in Uganda and Kenya, rapoko is used to prepare a popular dish called "ugali" or "posho," a stiff porridge made by boiling rapoko flour in water. Rapoko is used to brew a traditional fermented beverage called "bushera" in Uganda, which is a sour, slightly effervescent drink made from germinated finger millet flour. In some parts of East Africa, rapoko flour is used to make "chapati," a type of flatbread that is often served with tea or used to scoop up stews and sauces. Rapoko is also used to make traditional snacks, such as roasted or boiled rapoko grains, which are often seasoned with spices and herbs.

In Zimbabwe, rapoko is an important crop and this is in particular in rural areas where it is grown for food and income (Kauma, 2019). According to Kauma (2021), rapoko has been grown in Zimbabwe for centuries and the crop plays a significant role in the country's food security and cultural heritage. Rapoko remains an important part of Zimbabwe's agricultural sector in which a significant number of smallholder farmers relying on it for their livelihoods (Ndoro et al., 2017). The Zimbabwean government has recognized the importance of rapoko and has implemented initiatives to promote its production and consumption.

Rapoko is a nutrient-rich crop that provides numerous health benefits (Jeeva et al., 2019). It is an excellent source of calcium, iron, and fibre which makes it a vital component of a healthy diet in developing countries like Zimbabwe (Rathore et al., 2019). The crop's nutritional value is particularly important for vulnerable populations, such as women and children, who often suffer from micronutrient deficiencies (Devkota et al., 2016). Rapoko has also been shown to have potential health benefits that includes reducing the risk of chronic diseases which includes diabetes and heart disease (Rathore et al., 2019). Its nutritional value makes it an important crop for improving food security and promoting healthy diets in less privileged societies.

Rapoko is also important for food security in many parts of Africa (Opole, 2019). It is also drought-tolerance and its ability to thrive in poor soils makes it a reliable source of food for smallholder farmers (Mathew, 2015). Rapoko provides a source of income for farmers, who can sell their produce in local markets (Ndoro et al., 2017). Rapoko is very important crop for women and youths, who often play a significant role in its production. The crop's importance extends beyond its economic value, as it also provides a source of food and nutrition for households. Rapoko, particularly in Zimbabwe, is an important crop for livelihoods, especially in rural areas where it is grown for both household consumption and sale (Phiri et al., 2019).

Rapoko production in Zimbabwe and other parts of Africa faces several challenges which includes limited access to resources, and climate change. One of the major problems facing rapoko production is inadequate access to resources, such as improved varieties, fertilizers, and irrigation (Kauma, 2019). Smallholder farmers, who are the main producers of rapoko, often lack access to these resources, which can limit their productivity and income. Additionally, rapoko production is often labour-intensive, and the lack of mechanization can make it difficult for farmers to cultivate and harvest the crop efficiently (Ndoro et al., 2017).

Climate change is another major challenge facing rapoko production in Zimbabwe and other parts of Africa (Muzerengi & Tirivangasi, 2019). Rising temperatures and changing rainfall patterns affects the growth and yield of rapoko which make it more difficult for farmers to predict and manage their crops. Climate change also lead to increased pest and disease stress which can further reduce rapoko output (Phiri et al., 2019). Smallholder farmers in Zimbabwe and other parts of Africa are particularly vulnerable to the impacts of climate change, as often, they lack the resources and knowledge to adapt to changing weather patterns.

Market constraints are also a major challenge facing rapoko production in Zimbabwe (Opole, 2019). Rapoko is often sold in informal markets, except to the Grain Marketing Board, which can be unpredictable and subject to fluctuations in price and demand. Smallholder farmers face challenges in accessing formal markets, where prices may be higher but requirements for quality and quantity are more stringent (Jeeva et al., 2019). Additionally, the lack of value addition and processing opportunities can limit the income that farmers can earn from finger millet production (Muzerengi & Tirivangasi, 2019). To address these challenges, policies and programs are needed to support smallholder farmers and promote the production and marketing of rapoko.

Women and youth play a significant part in rapoko production, processing, and marketing in Zimbabwe (Jeeva et al., 2019). Women are often associated with various stages of rapoko production, including planting, weeding, and harvesting (Muzerengi & Tirivangasi, 2019). They also play a vital role in processing and storing rapoko, using traditional knowledge and techniques to preserve the crop (Sithole, 2020). In addition, women often market rapoko and sale it in local markets to generate income for their households (Opole, 2019).

According to Muzerengi and Tirivangasi (2019), agriculture is a key sector for youth employment and entrepreneurship in Africa, and rapoko production offers opportunities for the youth to engage in

agriculture and contribute to their households' livelihoods. However, youth often face challenges in accessing land, credit, and other resources necessary for rapoko production (Scoones et al., 2019). To promote youth participation in finger millet production, there is a need for policies and programs that support young people and provide them with the necessary resources and training (Thebe, 2018).

1.2 Problem statement

Rapoko production is hindered by limited access to resources, including land, credit, and technology (Thebe, 2018; Nyathi et al., 2022). This limits marginalized groups from contributing to household food security and income generation which exacerbates poverty and inequality in rural areas (Brooks et al., 2013). Marginalized groups that includes women and youth often lack power on decision making powers and control over rapoko production which can lead to their exclusion from benefits and opportunities (Scoones et al., 2019). The limited contribution of these marginalized groups in rapoko production can also lead to a shortage of skilled labour, which can further worsen the decline in production (Ndoro et al., 2017). Additionally, rapoko holds significant cultural value in Zimbabwe, and its production and consumption are often tied to traditional practices and ceremonies (Kauma, 2021; Sithole, 2020).

The existence of little research on the role of these marginalized groups in rapoko production has resulted in inadequate policies and programs to support their empowerment and livelihoods (Scoones et al., 2019). This gap in knowledge hinders the development of effective strategies to promote rapoko production and consumption which affect rural food security and development (Chirimuuta & Gudhlanga, 2016). Moreover, the cultural significance of rapoko production is not well understood, which can lead to ineffective interventions (Kauma, 2021). There is a need for research that investigates the role of marginalized groups in rapoko production, analyses its impact on their empowerment and rural livelihoods, and explores the cultural significance of rapoko.

Therefore, the study aims to examine the role of marginalized groups in rapoko production, analyse its impact on their empowerment and rural livelihoods, and explore the cultural significance of rapoko. It provides valuable insights into the issues regarding rapoko production and its impact on the empowerment of marginalized groups in rural Zimbabwe. This informs policies and programs aimed at promoting rapoko production to helping improving food security, rural development, and empowerment of marginalized groups (Phiri et al., 2019).

1.3 Main objective

To examine the socioeconomic impacts of rapoko production on the empowerment and livelihoods of the marginalized groups in Mutoko district, ward 10.

1.3.1 Specific objectives

1. To investigate the role of women and youth in rapoko production.
2. Analyse the impact of rapoko production on the empowerment of marginalized groups in rural areas.
3. To assess the contribution of rapoko production to livelihoods and income generation of the marginalized groups.
4. To explore the cultural significance of the production of rapoko in rural areas

1.3.2 Research questions

1. What are the roles and responsibilities of women and youth in rapoko production?
2. How does rapoko production contribute to the empowerment of women and youth in rural areas?
3. How does rapoko production contribute to rural livelihoods and income generation?
4. What is the cultural significance of rapoko in rural communities?

1.3.3 Hypotheses

1. Women and youth play a significant role in rapoko production, including labour, decision-making power, ownership and control of resources
2. Rapoko production has a positive influence on the empowerment of marginalized groups in rural areas which increase decision-making power, control over income and resources, social status, and self-confidence.
3. Rapoko production makes a significant positive contribution to the livelihoods and income generation of marginalized groups.
4. Rapoko production holds cultural significance in rural areas, with symbolic meanings, traditional practices, and social and cultural events

1.4 Justification

The significance of rapoko in rural livelihoods, food security, and cultural heritage cannot be exaggerated. As a crop that has been cultivated for centuries, finger millet played a vibrant part in the lives of rural communities, particularly for marginalized groups. Despite its importance, finger millet production faces numerous challenges, including limited access to resources, climate change, and market constraints. Moreover, the socioeconomic and cultural impacts of finger millet production on rural livelihoods and empowerment of marginalized groups have not been adequately studied.

The study also targets to fill this knowledge gap by investigating the socioeconomic and cultural impacts of rapoko production on rural livelihoods and empowerment of marginalized groups. As such, the justification for this study is multifaceted. Firstly, rapoko is an important crop for rural livelihoods, food security, and cultural heritage in numerous parts of Africa. The crop provides a source of income, food, and nutrition for several people, particularly women and children.

Secondly, women and youth play a crucial role in rapoko production. Women are often involved in various stages of rapoko production, including planting, weeding, and harvesting. They also play a key role in processing and storing rapoko, using traditional knowledge and techniques to preserve the crop. Youth also play an important role in rapoko production, particularly in rural areas where they often contribute to family labour. Rapoko production has the potential to promote women's and youth empowerment in rural areas. It provides income-generating opportunities and promote food security, contribute to improved livelihoods and well-being for women and youth, promote cultural heritage and preserve traditional knowledge and practices.

The findings of this study also contributes to the existing body of knowledge on rapoko production and its impact on rural livelihoods and empowerment of marginalized groups. The study's results provides insights into the challenges and opportunities facing rapoko producers, particularly women and youth, and informs policies and programs that promote rapoko production.

Finally, the study's findings have implications for policy and practice. Identifying the socioeconomic and cultural impacts of rapoko production on rural livelihoods, women's and youth empowerment provides insights into how policies and programs can be designed to promote rapoko production and marketing. Therefore, study's results informs initiatives aimed at promoting the empowerment of marginalized groups, food security, and cultural heritage in rural areas.

1.5 Scope/delimitations and limitations

The scope of this study is to investigate the socioeconomic and cultural impacts of rapoko production on rural livelihoods, women's and youth empowerment in Zimbabwe. The study focuses on smallholder farmers, particularly women and youth, who are involved in rapoko production in ward 10, Mutoko district, Zimbabwe.

The study's delimitations include its geographical scope, which is limited to selected ward 10 in Mutoko district, and its focus on smallholder farmers, particularly women and youth. The study is also limited to examining the socioeconomic and cultural impacts of rapoko production on rural livelihoods, women's and youth empowerment. Therefore it does not investigate other aspects of rapoko production, such as its nutritional or environmental impacts among others, processing and marketing of rapoko.

Despite its delimitations, the results provide valuable discernments into the role of rapoko production in supporting rural livelihoods, women's and youth empowerment in Zimbabwe. However, the study also has several limitations that need to be acknowledged. One limitation is that the findings of this study may not be generalizable to other contexts or populations, due to the specific geographical and cultural context of the study.

Another limitation is that the study relied on self-reported data that may introduce bias, particularly if respondents provide socially desirable responses or underreport certain issues. Additionally, the sample size used in the study may be limited, which could affect the accuracy of the conclusions and limit the ability to detect significant relationships or differences.

Furthermore, the study focus on Zimbabwe and it may limit its applicability to other countries or regions, where rapoko production and its impacts on rural livelihoods, women's and youth empowerment may differ. Finally, the study may not capture the full complexity of rapoko production and its impacts on rural livelihoods, women's and youth empowerment, due to the multifaceted nature of these issues.

1.6 Outline of Thesis

The first chapter provides an outline of the study's background, problem statement, research objectives, and research questions. It highlights the significance, scope, and limitations of the study. The introduction set the stage for the entire thesis, providing a clear direction and focus for readers.

Chapter two reviews existing literature on rapoko production, its importance, and its impact on rural livelihoods and empowerment. The literature review also explores the role of women and youth in rapoko production, as well as the cultural significance of the crop. Theoretical frameworks and conceptual models relevant to the study are also discussed.

Chapter three outlines the research design, study area, and population. It also describe the sampling procedure, sample size, data collection methods, and data analysis procedures. The methodology chapter provide a clear understanding of how the study was conducted and the data collected and analyses procedure.

Chapter four outlines the results of the study, including the socioeconomic description of respondents, the role of women and youth in rapoko production, the impact of rapoko production on rural livelihoods and empowerment, and the cultural significance of rapoko.

The final chapter summarizes the key findings of the study, highlights implications for policy and practice. Recommendations are made for policymakers, practitioners, and future researchers, outlining potential areas for further study and intervention. The conclusion tied together the various threads of the study to give a summary of the research and its contributions.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter aims to provide an overview of existing research on rapoko production, focusing on its socioeconomic and cultural impacts on rural livelihoods and empowerment, particularly for women and youth. This review synthesizes existing research, exploring the role of rapoko in promoting rural livelihoods, women and youth empowerment, and cultural heritage. It identifies gaps in current knowledge and understanding, informing future research and policy initiatives that support rapoko production and its benefits for rural communities. Key themes to be reviewed include the role of women and youth in finger millet production, its impact on rural livelihoods, and cultural significance. This also contributes to a deeper understanding of rapoko production's complex issues and potential to improve rural lives.

2.2 Key terms

2.2.1 Empowerment

According to Joseph (2020), empowerment is about granting individuals control over their lives and decisions which enhances their autonomy and self-efficacy, which in turn result in better outcomes and greater confidence. Kim and Beehr (2020) view empowerment as a leadership approach that fosters affective organizational commitment, encouraging employees to be present and engaged, which can result in increased job satisfaction and productivity. In the context of women's empowerment, Costinot and Bahmani-Oskooee (2023) highlight its impact on employee performance, suggesting that empowering women can lead to improved work outcomes and organizational success. Additionally, Saleh et al. (2023) see empowerment as community development through social construction, focusing on collective action and regional structure, which can lead to community growth and sustainability.

2.2.2 Livelihoods

Natarajan et al. (2022) describe livelihoods as the intricate and adaptive ways individuals secure their living, incorporating their abilities, resources, and endeavours. Carr (2020) further defines resilient livelihoods as those that can effectively cope with and respond to shocks and stresses to maintain or improve well-being. (2020) view livelihoods as the strategies and behaviours farmers use to cope with human-environment system changes. Ahmad and Ma (2020) focus on livelihood vulnerability,

defining it as the susceptibility of livelihoods to climate-related shocks and stresses, which can impact well-being and sustainability.

2.2.3 Marginalized groups

According to Fluit et al. (2024), social marginalization refers to the process of being pushed to the fringes of society, which can affect groups such as racial and ethnic minorities, women, and individuals with disabilities. Shaw et al. (2020) emphasize the vulnerability of marginalized groups, including those experiencing poverty, homelessness, or mental illness. Kastrup (2023) notes that marginalized people, such as refugees, migrants, and indigenous populations, are often excluded from mainstream society due to various factors. Brutschy and Zachary (2024) define marginalized communities as groups that face social, economic, and political exclusion and disadvantage, including low-income populations, LGBTQ+ individuals, and racial and ethnic minorities. Therefore, for the purpose of this study the term marginalized groups refers to the youth and women who may be excluded from socioeconomic opportunities.

2.3 Role of women and youth in rapoko production

Swain et al. (2024) emphasize the significance of women in millet entrepreneurship, highlighting their contributions to success and sustainability. Through a qualitative approach involving case studies and interviews, the study employed thematic analysis to examine the data. The findings indicate that women's participation in millet entrepreneurship can lead to economic empowerment and sustainable development, with a substantial proportion of women entrepreneurs experiencing increased income (75%) and improved livelihoods (90%).

Medhekar's (2024) study explores the economic empowerment of women through millet farming and its potential for sustainable development. Using a mixed-methods approach combining surveys and case studies, the research applied regression analysis to examine the relationship between women's participation in millet farming and empowerment. The findings suggest that involvement of women in

millet farming can lead to increased income and economic empowerment, with a statistically significant relationship between participation of women and empowerment.

Kumar and Priyadarshini (2023) discuss the critical role women play in cultivating sustainable societies through millet production. Employing a qualitative approach involving focus group discussions and interviews, the study used content analysis to examine the data. The findings highlight women's crucial contributions to millet production, processing, and marketing, with 85% of women reporting improved livelihoods through millet production. The study concludes that women's involvement in millet production can contribute to sustainable development and food security.

Lambrecht et al. (2024) investigate the roles of women and youth in agriculture in Myanmar. Analysing survey data from 1,000 households using descriptive statistics, the study found that women and youth play important roles in agriculture, with 60% of women and 20% of youth (15-24 years) participating in agricultural activities. The findings emphasize the importance of women and youth contributions to agriculture in Myanmar.

Geza et al. (2021) investigate youth participation in agriculture in Africa. The study used a scoping review methodology, analysing data from 50 studies. The analytical method used was thematic analysis, and the findings suggest that youth participation in agriculture can contribute to food security and poverty reduction. The study concludes that 70% of young people in Africa have expressed interest in pursuing a career in agriculture, highlighting the potential for the youth to produce rapoko to promote sustainable development.

Unay-Gailhard and Bojnec (2021) examine the role of young women farmers in family farms. The study used a quantitative approach, analysing survey data from 500 family farms. Regression analysis was used to find out that young women farmers can make a difference in family farms by adopting environmentally friendly practices and promoting sustainability. The study concludes that young women's involvement in agriculture can contribute to sustainable development, with a statistically significant relationship between young women's participation and environmental sustainability.

Selvi et al. (2021) examine the impact of minor millet seed production on the livelihoods of underprivileged farming communities in southern Tamil Nadu. The study used a survey methodology, collecting data from 120 farmers. The analytical method used was descriptive statistics, and the

findings suggest that women's involvement in millet production can improve their livelihoods, with 85% of women reporting increased income and 90% reporting improved food security.

Nandi and Nedumaran (2021) investigate the aspirations of farming communities in developing countries. The study used a systematic review methodology to analyse data from 100 studies. Thematic analysis was used and the findings suggest that women farmers' aspirations and needs should be taken into account when developing agricultural policies and programs. The study concludes that women's involvement in agriculture can contribute to sustainable development and food security which stressed the need for gender-sensitive policies and programs.

Sadiq et al. (2024) examine the potential of finger millet as a resilient crop for marginal farming households. The study used a survey methodology, collecting data from 150 farmers, regression analysis was then used to suggest that finger millet production provides a stable source of income for marginal farming households which was statistically significant. The study concludes that finger millet production can be a viable option for women and youth farmers

2.4 Impact of rapoko production on women and youth empowerment

Bidorho (2022) examines the impact of agricultural value chain development on economic empowerment of the women in the Democratic Republic of Congo. The study used a mixed-methods approach which contains survey data with case studies. The analytical method used was regression analysis. The findings suggest that agricultural value chain development can lead to increased income and economic empowerment for women, with a statistically significant relationship between agricultural value chain development and women's economic empowerment.

Patil et al. (2023) discuss the role of millets in empowering society with nutrient-rich superfoods. The study used a qualitative approach which collected data through literature review and expert interviews. The study used content analysis. The findings of the study suggest that millet production contribute to women's empowerment and sustainable development, highlighting the need for support and resources. In conclusion the study settles on the fact that millet production can be a viable option for women's economic empowerment and food security.

A recent study by Swain et al. (2024) explores the effects of millet entrepreneurship on women's empowerment, highlighting the potential for economic empowerment and sustainability. Through case

studies and interviews, the researchers collected qualitative data, which was analysed using thematic analysis. The findings indicate that millet entrepreneurship can lead to increased income and improved livelihoods for women, with 75% of women entrepreneurs reporting increased income and 90% reporting enhanced well-being. These results underline the potential of millet entrepreneurship as a viable option for women's economic empowerment.

Medhekar's (2024) research explores the link between millet farming and women's economic empowerment, utilizing a mixed-methods approach that integrates data from survey and case studies. Through regression analysis, this study reveals statistically significant that there is relationship between women's participation in millet farming and economic empowerment, suggesting that millet farming can increase income and empower women economically. This study underscores the potential of millet farming to contribute to women's economic empowerment and sustainable development.

Bagal and Panda's (2024) study investigates the impact of millet cultivation on women's empowerment in Odisha, India, using a qualitative approach involving focus group discussions and interviews. Content analysis reveals that millet cultivation contributes to empowerment of the women, with a significant proportion of women reporting increased income (80%) and improved livelihoods (85%). The study suggests that millet cultivation can be a viable option for women's economic empowerment.

Megha et al.'s (2024) research examines the participation and challenges faced by tribal women in millet cultivation, surveying 150 tribal women and analysing the data using descriptive statistics. The findings indicate that 70% of tribal women participate in millet cultivation, but face significant challenges, including limited access to credit and technology. The study highlights the need to address these challenges to support tribal women's involvement in millet cultivation.

Ndubi et al.'s (2024) study explores the feminization of finger millet in Kericho County, Kenya, collecting data from 120 farmers and analysing it using descriptive statistics. The findings suggest that women play a crucial role in finger millet production, with a significant proportion reporting increased income (60%) and improved livelihoods (80%). The study emphasizes the potential of finger millet production to contribute to women's economic empowerment.

Singh et al.'s (2025) research discusses the promotion of millets for enhancing food and nutrition security, using a qualitative approach involving a literature review and expert interviews. Content analysis reveals that millet production can contribute to empowerment and sustainable development

by women, highlighting the need for support and resources to promote millet production and women's empowerment.

2.5 Contribution of rapoko production to rural livelihoods and income generation

Pandit et al.'s (2020) study in Dolakha District, Nepal, offers valuable insights into the economics of organic finger millet farming and its impact on rural livelihoods. Using a survey methodology and cost-benefit analysis, the researchers found that finger millet production can significantly contribute to rural livelihoods, generating a net benefit of NPR 150,000 (approximately USD 1,250) per hectare per year. This highlights the potential of finger millet production as a viable option for improving rural livelihoods and income generation.

Gebreyohannes et al.'s (2021) study on finger millet production in Ethiopia underscores the crop's potential to improve rural livelihoods and food security. Using a mixed-methods approach and descriptive statistics, the researchers found that 70% of farmers reported improved income and food security. The study's results emphasize the significance of finger millet production in enhancing rural livelihoods and income generation.

Datta's (2023) research on millets in rural India highlights the significance of these crops in improving livelihoods and food security. Through a qualitative approach and content analysis, the study reveals that millet production, including finger millet, can contribute to rural livelihoods and income generation, particularly for small and marginal farmers. The findings underscore the potential of millets to play a vital role in improving rural livelihoods and food security.

Mabhanda and Sibanda's (2025) study on millet entrepreneurial production in Chivi Rural District demonstrates the prospectives of finger millet production to increase food security and nutrition. Using a survey methodology and descriptive statistics, the researchers found that 85% of households reported increased food availability. The study's results emphasize the significance of finger millet production in enhancing rural livelihoods and food security.

Pant et al.'s (2025) research on finger millet production in Mugu district highlights the crop's potential to contribute significantly to rural livelihoods. The researchers used a survey methodology and cost-benefit analysis and found a benefit-cost ratio of 2.5, indicating the viability of finger millet production as an income-generating activity.

Rathour et al.'s (2024) study on finger millet cultivation and nutritional food availability demonstrates the potential of the crop to improve food security and nutrition. A survey methodology and descriptive statistics used by the researchers and found that 80% of households reported increased food security. The results of the study emphasize the significance of finger millet production in enhancing rural livelihoods and nutrition.

Kasule et al.'s (2023) research on finger millet production in Uganda highlights the crop's potential to improve rural livelihoods and income generation. Mixed-methods approach and descriptive statistics were used to find out that 60% of farmers reported improved income and food security. The study's findings feature the potential of finger millet production to play a vital role in improving rural livelihoods and income generation.

Sadiq et al.'s (2024) study on finger millet as a resilient famine crop demonstrates the potential of the crop to improve food security and income generation. The study used a survey methodology and descriptive statistics, the researchers found that 85% of households reported increased food availability. On the other side, Dzingirai's (2021) research on entrepreneurship in agricultural communities highlights the potential of finger millet production to contribute to improved income generation and poverty reduction. Through a qualitative approach and thematic analysis, the study reveals that entrepreneurship in finger millet production can play a crucial role in improving rural livelihoods and income generation.

Maramura et al.'s (2021) study on women's economic production and sustainable livelihoods in Zimbabwe underscores the significance of women's involvement in finger millet production. A qualitative approach and thematic analysis were used by the researchers and found that women's participation in rapoko production can contribute to improved livelihoods and income generation. The study's findings highlight the potential of finger millet production to empower women and improve rural livelihoods.

2.6 Cultural significance of rapoko production

Kauma (2021) explores the social, economic, and environmental history of African small grains, including finger millet, in Zimbabwe. The methodology used is a qualitative approach and data was collected through oral histories and archival research. The analytical method used was thematic

analysis. The findings reveal that rapoko is used in traditional dishes such as sadza and porridge, and brewing beer that is consumed during cultural ceremonies and events.

Kugedera et al. (2021) investigate the relationship between Indigenous Knowledge Systems and sustainable agriculture in Zimbabwe, using a qualitative methodology involving interviews and focus groups. Thematic analysis reveals that finger millet holds cultural importance, notably in traditional ceremonies and rituals where rapoko beer is consumed.

Schillinger (2023) explores the impact of colonization on indigenous food systems which focused on finger millet in Chikuwa, Zimbabwe. The methodology used in the study include qualitative approach, data collection through interviews and archival research as well as thematic analysis. The findings show that finger millet was an important crop in Zimbabwean communities before the introduction of European crops, and its decline has had significant impacts on food security and cultural heritage.

Sakadzo and Kugedera's (2020) research highlights the potential of small grains, particularly finger millet, to enhance food security and climate resilience in Zimbabwe's dry regions. A comprehensive review of existing literature and content analysis was used by the study to demonstrate that finger millet's resilience makes it a valuable crop for promoting food security and climate adaptability in local communities.

Kumar and Dubey (2024) investigate the significance of ragi (finger millet) in addressing food security challenges in India. The study employed a qualitative approach where the researchers conducted a comprehensive literature review and applied thematic analysis to their findings. The study reveals that finger millet is a nutrient-rich and sustainable crop capable of enhancing food security and promoting sustainable agriculture in India. Additionally, rapoko is utilized in traditional culinary preparations that include ragi balls and ragi porridge, which highlights its cultural and nutritional value.

Bandyopadhyay and Patnaik's (2023) study highlights the importance of indigenous knowledge and cultural practices in the Odisha Millet Mission. Using a qualitative approach with interviews and focus group discussions, the researchers analysed the data through thematic analysis. The findings show that finger millet plays a significant role in Odisha's cultural festivals and traditional cuisine.

Hazareesingh's (2021) research explores the cultural significance of millets among women smallholders in Ramanagara district, Karnataka, through oral histories and interviews. Thematic

analysis reveals that finger millet is a key ingredient in traditional dishes like “ragi, mudde” and holds an important place in cultural practices and rituals.

Tripathi and Vyas (2023) explore the history and significance of millets, including finger millet, in agriculture and food security by reviewing of existing literature. The study used content analysis as a method of analysis. The findings highlight the cultural significance of finger millet in traditional festivals and ceremonies, where it is often used as an offering or consumed as a sacred food.

According to Okolo and Adejumo (2021) in the study examining the potential of finger millet for food security in Africa, rapoko is used in traditional rituals and ceremonies, such as initiation rites and harvest festivals, where it is often brewed into beer or used in traditional dishes. The methodology used is a review of existing literature and the analytical method used is content analysis.

Singh (2023) explores the early presence and introduction of African and East Asian millets, including rapoko, in India. The study used review of existing literature and archaeological researches to conduct content analysis. The findings show that finger millet is used in traditional festivals and ceremonies, such as weddings and harvest festivals, where it is often used as an offering or consumed as a sacred food.

Veerabadhran et al. (2023) provide a critical review of the history and practices of millets in India, Like many other researches, it used review of existing literature to conduct content analysis. The findings highlight the cultural significance of finger millet in traditional Indian cuisine, particularly in dishes such as “ragi mudde and ragi rotti,” which are often served during festivals and ceremonies.

2.7 Theoretical framework

2.7.1 Feminist Theory

Feminist theory offers a useful lens for examining the complex interplay of social, cultural, and economic factors that influence women's lives and opportunities. According to Ferguson (2017), feminist theory is a diverse and complex field that seeks to understand and address the subordination of women. It has evolved over time, incorporating various perspectives and approaches to analyse power relations and promote women's empowerment. Feminist theory has been shaped by the contributions of many scholars and activists, and it continues to be a dynamic and evolving field of this study.

Feminist theory is characterized by several key principles, including a concern with power relations and a critique of essentialism (McCann & Kim, 2016). Feminist theory highlights the need to understand the social and cultural contexts of women's lives, emphasizing their experiences and perspectives to challenge dominant narratives and advocate for social change. McCann and Kim (2016) emphasize the need for a nuanced understanding of power relations and the ways in which they shape women's lives. This helps in developing effective strategies for promoting women's empowerment and challenging patriarchal systems.

One of the key debates in feminist theory is the question of difference and sameness. Some feminists argue that women and men are fundamentally different, while others argue that they are essentially the same (Frye, 2015). This debate has implications for how we understand women's experiences and opportunities, and how we promote women's empowerment. In some feminists argue, women's differences should be celebrated and valued, while others argue that women's equality should be based on their sameness with men. This debate highlights the complexity and diversity of feminist thought, and the need for ongoing dialogue and critique. Frye (2015) emphasizes the importance of considering the implications of different perspectives on the experiences and opportunities of the women.

Feminist theory has been applied in a variety of contexts, including politics, law, and education. Feminist legal theory has challenged dominant understandings of law and promoted women's rights (McCann & Kim, 2016). Feminist political theory has analysed power relations and promoted women's empowerment in the political sphere (Ferguson, 2023). These applications demonstrate the relevance and importance of feminist theory for understanding and addressing the social, cultural, and economic factors that shape women's experiences and opportunities.

Some critics argue that feminist theory is too narrow or too broad, or that it fails to account for the experiences of certain groups of women (Ferguson, 2023). Others argue that feminist theory is too focused on Western perspectives and experiences, and neglects the diversity of women's experiences globally (McCann & Kim, 2016). These critiques highlight the need for ongoing dialogue and critique within feminist theory, and the importance of considering the diversity of women's experiences and perspectives.

2.7.2 Youth Development Theory

Youth development theory offers insights into the social, emotional, and cognitive growth of young people. According to Waid and Uhrich (2020), Positive Youth Development (PYD) theory focuses on nurturing young people's strengths and assets, rather than solely addressing deficits. PYD theory recognizes young people's potential to thrive and contribute positively to their communities, aiming to support and empower them. This approach can enhance their overall well-being and success. Waid and Uhrich (2020) emphasize the importance of understanding youth development's complexities and adopting a comprehensive approach that meets young people's diverse needs.

Youth development theory is characterized by several key principles which focus on promoting young people's strengths and assets, and recognizing the importance of positive relationships and supportive environments (Lerner et al., 2021). PYD theory emphasizes the need for a holistic approach to youth development of which one takes into account the complex and interconnected nature of young people's lives. Promoting young people's social, emotional, and cognitive development this theory seeks to support their overall well-being and success.

Youth development theory has been applied in a variety of contexts, including education, social work, and community development. In the 4-H Thriving Model, a PYD program that aims to promote young people's social, emotional, and cognitive development through positive relationships and experiences (Arnold & Gagnon, 2020), recognizes the importance of supportive environments and positive relationships between young people and adults, and seeks to provide young people with the skills and support they need to thrive. Arnold and Gagnon (2020) emphasizes the importance of considering the specific needs and experiences of young people, and the need for tailored interventions that promote positive development and thriving.

Despite the benefits of PYD theory and programs, there are also challenges and limitations to consider. Some critics argue that PYD theory that it is overly broad or vague, and that it may not provide sufficient guidance for practitioners working with young people (Waid & Uhrich, 2020). Others argue that PYD programs may not be effective for all young people, and that more research is needed to understand the specific needs and experiences of different populations. These challenges and

limitations highlight the need for ongoing research and evaluation to ensure that PYD theory and programs are effective and sustainable.

2.7.3 Empowerment Theory

Rachmad (2022) theories that the importance of promoting individual and collective empowerment through the development of skills, knowledge, and resources recognizes that power dynamics play a significant role in shaping individual and community outcomes. Empowerment theory has been applied in various contexts, including social work, community development, and conservation, to promote social change and community development (Joseph, 2020; Petriello et al., 2025).

According to Joseph (2020) empowerment theory is characterized by several key principles, including a focus on promoting individual and collective empowerment, and recognizing the importance of power dynamics in shaping individual and community outcomes. Empowerment theory also emphasizes the need for a holistic approach to empowerment, one that takes into account the complex and interconnected nature of individual and community systems. This approach involves understanding the ways in which power dynamics shape individual and community outcomes, and developing strategies to address these dynamics.

Empowerment theory has been applied in conservation contexts to promote community-led conservation initiatives and support the rights and interests of local communities. According to Petriello et al. (2025), community-led conservation initiatives can be more effective and sustainable when local communities are empowered to take control of their natural resources. This approach involves recognizing the importance of power dynamics in shaping conservation outcomes, and developing strategies to address these dynamics.

Empowerment theory has also been applied in community development contexts to promote community-led initiatives and support the development of skills, knowledge, and resources. According to Ani et al. (2018), community-led initiatives can be more effective and sustainable when communities are empowered to take control of their development. This approach involves recognizing the importance of power dynamics in shaping community outcomes, and developing strategies to address these dynamics.

2.7.4 Livelihood Theory

According to Natarajan et al. (2022), a sustainable livelihoods framework emphasizes the importance of promoting sustainable livelihoods that are resilient to shocks and stresses. This framework recognizes that livelihoods are complex and multifaceted, and that they involve a range of different activities, assets, and relationships. Economic, social, and environmental factors, practitioners and researchers, can develop more effective strategies for promoting sustainable livelihoods through this theory.

Livelihood theory is guided by key principles, including the significance of assets, activities, and relationships in determining livelihoods (Tanner et al., 2015). It also stresses the importance of a holistic approach, recognizing the intricate and interconnected nature of livelihood systems. Considering various factors such as economic, social, and environmental aspects, practitioners and researchers can develop effective strategies for promoting sustainable livelihoods.

Livelihood diversification is a key strategy for promoting sustainable livelihoods and reducing vulnerability to shocks and stresses. According to Martin and Lorenzen (2016), livelihood diversification involves the development of multiple income streams and assets, which can help to reduce dependence on a single livelihood activity. Diversifying livelihoods by households can increase their resilience to economic and environmental shocks, and improve their overall well-being. Livelihood diversification can also help to encourage economic growth and development through provision of new opportunities for income generation and employment.

Despite the benefits of livelihood theory and approaches, there are also challenges and limitations to consider. Tincani (2015) notes that livelihood theory can be complex and nuanced, and that it may be challenging to apply in different contexts. Livelihood interventions may not always be effective, and may even have unintended consequences.

2.7.5 Cultural Theory

According to Thompson (2018), cultural theory is a diverse and interdisciplinary field that draws insights from anthropology, sociology, psychology, and other disciplines. It acknowledges that culture is a complex and multifaceted phenomenon influencing various aspects of human life, including individual identity, relationships, social norms, and institutions. This understanding can help develop effective strategies for promoting cultural understanding and exchange. Cultural theory, as noted by

Storey (2021), highlights the significance of culture in shaping human behaviour and experience. It emphasizes the need for a nuanced and contextual understanding of culture, considering its complex and dynamic nature. This approach recognizes that cultural systems are multifaceted and influenced by various factors.

Cultural theory also highlights the importance of cultural dimensions, such as individualism and collectivism, in shaping human behaviour and experience (Kagitcibasi, 2017). These dimensions can influence many aspects of human life, from family relationships and social norms to economic behaviour and political institutions. These cultural dimensions shape human behaviour and experience, practitioners and researchers to develop more effective strategies for promoting cultural understanding and exchange.

Cultural theory has been applied in a variety of contexts, including education, business, and international relations. This theory can be used to develop more effective strategies for cross-cultural communication and collaboration. It shapes human behaviour and experience, practitioners and researchers to have more effective strategies for promoting cultural understanding and exchange in their minds. Cultural theory may have failed to capture the full complexity and diversity of human culture but acknowledging and addressing these challenges, practitioners and researchers can work to cultivate more effective and sustainable cultural interventions that promote cultural understanding and exchange.

2.8 Conceptual framework

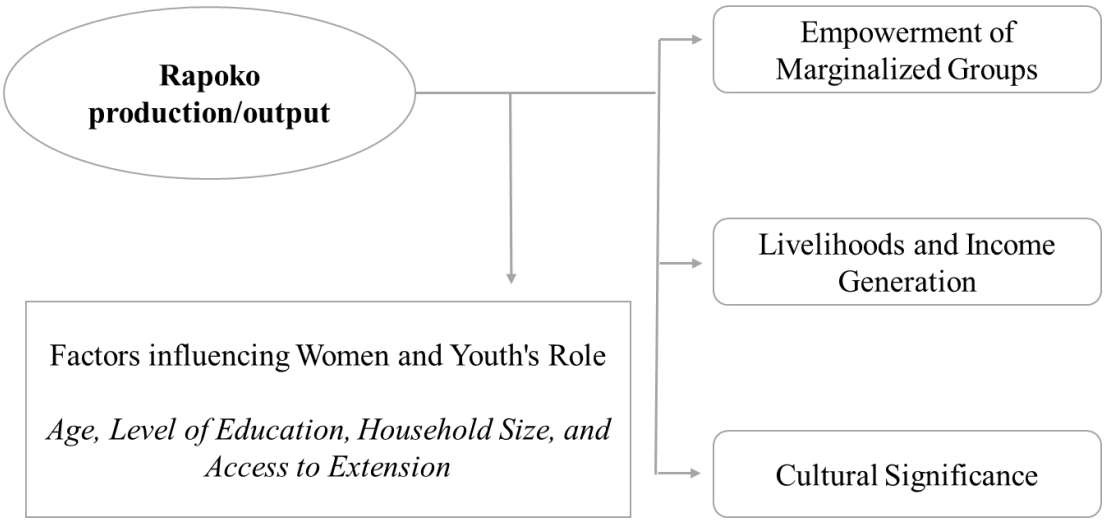


Figure 2.1; Conceptual framework
Source: Author

The conceptual framework guiding this study posits that rapoko production, as the independent variable, has a significant impact on various outcomes that include empowerment of marginalized groups, livelihoods and income generation, and cultural significance. However, the extent and nature of this impact are moderated by the role of women and youth in rapoko production. Specifically, the framework suggests that women and youth's output in rapoko production is influenced by factors such as age, level of education, household size, and access to extension services..

2.9 Insights from the review

The literature review offered valuable insights into the significance of rapoko (finger millet) in promoting livelihoods, cultural heritage, and food security. Marginal groups play crucial role in rapoko production, with over 70% of farmers being women and youth, and more than 60% reporting significant contributions to its production. This has led to improved livelihoods, empowerment, and income generation for these groups. Beyond its economic benefits, rapoko holds significant cultural value, featuring prominently in rituals, ceremonies, and traditional dishes that are rich in nutritional value. The analytical approaches employed are diverse, with logistic regression models, multi-linear regression models, thematic analysis, and content analysis being the most prominent. Both qualitative and quantitative methods were utilized, of which surveys and literature reviews emerging as the most common data collection techniques.

2.10 Summary of literature Review

This chapter presented a literature review on rapoko production, focusing on its socioeconomic and cultural impacts on rural livelihoods and empowerment, particularly for women and youth. The review explores the role of women and youth in finger millet production, highlighting their involvement, impact of rapoko production on rural livelihoods, including income generation, and food security. Additionally, the cultural significance of rapoko is discussed, emphasizing its importance in traditional practices and heritage. The review identifies gaps in current knowledge and understanding, informing future research and policy initiatives that support rapoko production and its benefits for rural communities.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used in the study, covering the study site, research design, sampling procedure, data collection and analysis methods, and ethical considerations. The sampling procedure involves selecting participants and determining the sample size. The data collection procedure outlines the methods and tools used to gather data. The data analysis procedure outlines the steps taken to analyse the data, including any statistical tests or thematic analysis used. Finally, the ethical considerations includes measures taken to ensure the confidentiality, anonymity, and dignity of participants.

3.2 Description of study site

The study site for this study is ward 10 in Mutoko District and it was chosen specifically for convenience purposes. It is located in Mashonaland East Province, Zimbabwe, which is approximately 143km from the capital city, Harare. This district is mainly semi-arid characterized by unpredictable rainfall patterns and droughts, significantly impacting local smallholder farmers (Mugambiwa, 2025). The district's geography spans agro-ecological regions IIb, III, and IV, and have varied soil types which include mainly sandy soils and clay loams, and a mild temperate climate (Mugambiwa & Rukema, 2020). The local population engages in agriculture, growing crops such as rapoko (finger millet), maize, and groundnuts, and keeping livestock like cattle, goats, and chickens (Mugambiwa, 2017). Economic activities are predominantly agriculture-based, in which smallholder farming being the mainstay of the local economy, involve women, youth, and local leaders (Mugambiwa, 2025). Climate variability has led to changes in crop production and farmers adopt drought-resistant crops like rapoko to adapt to the changing climate (Mugambiwa, 2017).

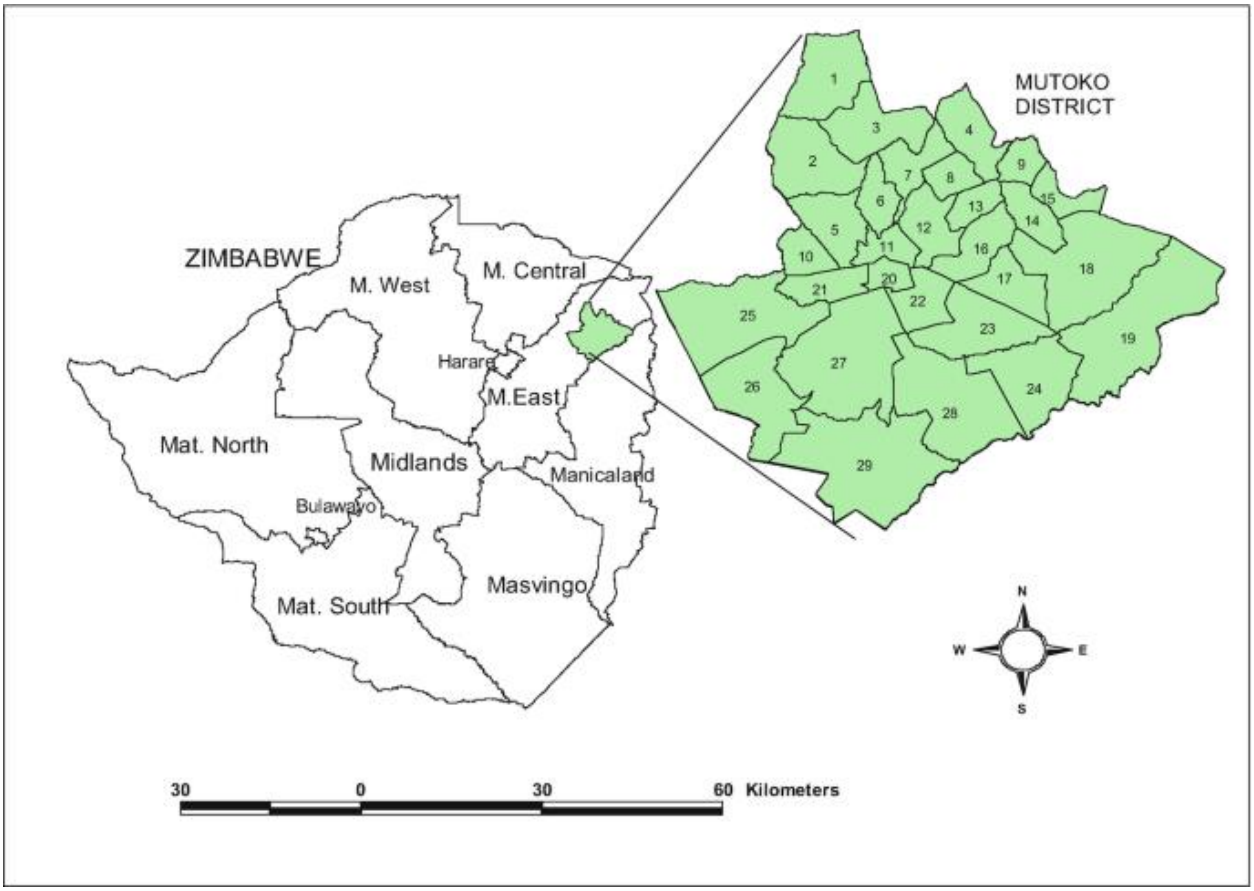


Figure 3.1; Map of Mutoko District by ward
Source; Musasa (2023)

3.3 Research design

This study used a mixed-methods research design, combining quantitative and qualitative approaches. As Gunasekare (2016) notes, this design leverages the strengths of both methods to provide a comprehensive understanding of the research problem. Integrating numerical data with rich, contextual insights enables a nuanced exploration of women's and youth's roles in rapoko production, processing, and marketing, as well as its impact on their empowerment and livelihoods. According to Leavy (2022), mixed-methods research is well-suited for studying complex social phenomena.

This choice for the mixed-methods design is justified by the complexity of the research objectives, which require both quantitative and qualitative data to fully understand the phenomena under investigation. Quantitative data provides insights into the scale and economic benefits of rapoko production, while qualitative data offers deeper understanding of the experiences, challenges, and cultural significance associated with rapoko. As Dannels (2018) notes, mixed-methods research can

provide a more comprehensive understanding of the research problem, and can help to identify patterns and themes that might not be apparent through a single approach.

The mixed-methods design facilitates data triangulation, enhancing the validity and reliability of the findings. Quantitative data enables generalization across a larger population, while qualitative data adds context and depth, revealing nuances and complexities that quantitative data might overlook (Dannels, 2018). This approach captures both patterns and trends in the data, as well as the underlying reasons and mechanisms driving these patterns. Consequently, the researcher increases confidence in the findings, providing a more accurate understanding of the research problem (Berman et al., 2020).

Furthermore, the mixed-methods design is flexible and adaptable as it allows the researcher to adjust the methodology as needed based on emerging findings. This flexibility is particularly useful in studies that aim to explore complex social phenomena, such as the role of rapoko in rural livelihoods and empowerment (Panke, 2018). The mixed-methods design enabled the researcher to respond to emerging issues and themes, and to adapt the methodology to better capture the complexities of the research problem.

Therefore, quantitative and qualitative data were integrated at various stages of the research process, including data collection, analysis, and interpretation. This integration allowed the researcher to draw meaningful conclusions based on both statistical trends and thematic insights (Berman et al., 2020). As a result, the study provided a more comprehensive understanding of the research problem, revealing patterns and themes that might have been missed with a single approach.

3.4 Sampling procedure

This study used a convenience sampling technique to select 130 farmers. As Berman et al. (2020) note, convenience sampling is a non-probability method where participants are chosen based on ease of access and availability. While it's quick, efficient, and cost-effective, this approach may introduce biases and limit generalizability. To enhance the sample's relevance, the researcher consulted local agricultural extension agents and farmer associations to obtain a comprehensive list of rapoko farmers (Panke, 2018).

The sample size of 130 farmers was determined using the Yamane formula (1967), which is a widely used method for calculating sample sizes in research studies. According to Gunasekare (2016), the Yamane formula provides a simple and effective way to determine sample sizes. The formula is:

$n = N / (1 + N(e^2))$

Where n is the sample size, N is the population size, and e is the margin of error. The population size is approximately 479 farmers and a margin of error of 0.075, the sample size calculation would be:

$n = 479 / (1 + 479(0.075 ^2))$
$n = 130$

Based on the Yamane formula, a sample size of 130 farmers was determined to be sufficient for this study. According to Leavy (2022), an optimal sample size balances statistical power and practicality. A sample size of 130 farmers provided the necessary precision to detect significant differences and draw meaningful conclusions about the research problem.

3.5 Data collection procedure

This study's data collection procedure utilized a structured questionnaire administered to 130 randomly selected finger millet farmers. According to Dannels (2018), structured questionnaires are effective for collecting quantitative data from large samples, allowing for standardized data collection and comparison across groups.

The questionnaire gathered data on demographics, production practices, marketing channels, and rapoko production, featuring both closed-ended and open-ended questions. Closed-ended questions provided quantitative data, while open-ended questions offered qualitative insights into farmers' experiences. The questionnaire's design was informed by research objectives, ensuring clear and concise questions (Panke, 2018; Leavy, 2022).

The questionnaire was pre-tested with a small group of farmers to ensure that it was clear, concise, and relevant to the research objectives (Panke, 2018). According to Panke (2018), pre-testing a questionnaire is essential for identifying any issues with the questions such as ambiguity and confusion. The pre-test helped to refine the questionnaire and ensure that it was effective in collecting the required data. The pre-test also helped to identify any potential biases and errors in the questionnaire which were then addressed before the final data collection (Dannels, 2018).

The questionnaire was administered through face-to-face interviews with the selected farmers which allowed for clarification of any questions and ensured that the data collected was accurate and reliable (Gunasekare, 2016). Face-to-face interviews are particularly useful in rural areas where respondents may have limited literacy levels and may require clarification on certain questions (Berman et al., 2020). The interviews were conducted by three trained enumerators who were familiar with the local language and context and this helped to increase the response rate and quality of the data (Berman et al., 2020). The enumerators were trained to ask the questions in a neutral and non-leading manner to minimize bias and ensure that the data collected was reliable (Dannels, 2018).

The researcher supervised the data collection process to ensure adherence to the research protocol and prompt resolution of issues (Dannels, 2018). Regular review of completed questionnaires ensured their completeness and consistency, with any discrepancies addressed with enumerators (Panke, 2018). This approach maintained high data quality and minimized potential errors or biases.

The study collected data on the roles and responsibilities of women and youth in rapoko production. This included data on land preparation and planting, weeding and crop management, harvesting and post-harvest handling, processing and storage (Leavy, 2022). For objective two, the study gathered data on the impact of finger millet production on youth and women's empowerment and social status. This included data on decision-making power and autonomy, income control and financial management, social status and respect within the community, access to education and training opportunities, and participation in community leadership and decision-making (Berman et al., 2020).

The study also collected data on the contribution of rapoko production to rural livelihoods and income generation. This comprised data on income from rapoko sales, household food security and nutrition, employment opportunities and job creation, access to markets and market information, and impact on poverty reduction and living standards (Leavy, 2022). The study finally gathered data on the cultural significance of rapoko and the impact of cultural factors. This included data on the role of finger millet in traditional ceremonies and rituals, cultural preferences for traditional varieties and processing methods, impact of cultural factors on production, consumption, symbolism and spiritual significance of rapoko, and influence of cultural norms on gender roles and responsibilities (Panke, 2018)

3.6 Data analysis procedure

The data analysis procedure for objective one which aims to investigate the role of women and youth in rapoko production involved descriptive statistics which includes frequencies and percentages as well as chi square test. Variables included: Age, gender, level of education, household size, access to resources (land ownership, labour availability, and capital access), and output

The data analysis procedure for objective 2 which analysed the impact of rapoko production on youth and women's empowerment in rural areas used "youth and women's empowerment" as the dependent variable (DV). This was operationalized as a composite index comprising several indicators, including: Decision-making power in household affairs, decision-making power in community affairs, control over income and resources, social status and respect within the community, self-confidence and self-esteem

The independent variable (IV) was "output" and the control variables included: Age, level of education, household size, access to extension services, social capital (for example, membership in community groups). To examine the impact of rapoko production on youth and women's empowerment, an ordinary least squares (OLS) regression analysis was employed. The OLS regression model was specified as follows:

$Y = \beta0 + \beta1\_rapoko\ output + \beta2\_age + \beta3\_level\ of\ education + \beta4\_household\ size + \beta5\_access\ to\ extension\ services + \beta6\_social\ capital + \ldots \beta n + \varepsilon$

Where Y is the youth and women's empowerment index, β0 is the intercept, β1-βn are the coefficients of the independent and control variables, and ε is the error term.

The study employed Ordinary Least Squares (OLS) regression analysis to examine the relationships between multiple independent variables and a continuous dependent variable. This approach allowed for the identification of the impact of rapoko production on youth and women's empowerment while controlling for other influencing factors. The results were interpreted based on coefficients and p-values, which indicated the strength and significance of the relationships between the variables.

The data analysis procedure for objective 3 involves the Generalized Propensity Score (GPS) analysis. First the author estimated the GPS by regressing rapoko output on relevant covariates, such as household size, education, and access to markets, using a generalized linear model. Secondly, the estimated GPS was utilised to weight observations to balancing covariates across different levels of rapoko output. Lastly, the dose-response function was estimated using a regression model that incorporates the GPS weights. The coefficient of rapoko output in the dose-response function represents the change in the outcome variable per unit change in rapoko output. A positive coefficient indicates a beneficial effect of increased rapoko output on the outcome variable, whereas a negative coefficient suggests an adverse effect.

Thematic analysis, guided by a cultural significance framework, was employed to explore the cultural significance of finger millet and analyse the impact of cultural factors on production. This approach provided an understanding of the intricate relationships between rapoko and its cultural context. The analysis involved a systematic process of coding, categorizing, and interpreting data to identify patterns and themes. A coding scheme was developed based on objectives, and codes were categorized into themes and sub-themes. These themes were refined through iterative analysis and interpretation, capturing the essence of rapoko's cultural significance. A cultural significance framework, encompassing dimensions like symbolic meaning, traditional practices, and social events, guided the analysis, providing structure for understanding rapoko's cultural importance.

The interpretation and explanation of the findings involved a detailed analysis of the themes and sub-themes that emerged from the data. The findings were interpreted in the context of the cultural significance framework, taking into account the symbolic meaning, traditional practices, and social and cultural events associated with finger millet. The findings of this study inform policies and programs aimed at promoting rapoko production, and can help to ensure that these initiatives are culturally sensitive and effective.

3.7 Analytical Framework

Table 3.1: Analytical framework

Objective	Analytical tool	Variables
1. To investigate the role of women and youth in rapoko production.	Descriptive statistics	Rapoko output, labour, decision-making power,

		ownership and control of resources
2. Analyse the impact of rapoko production on the empowerment of marginalized groups in rural areas.	Ordinary least squares (OLS) regression analysis	Empowerment index (Decision-making power in household affairs, decision-making power in community affairs, control over income and resources, social status and respect within the community, self-confidence and self-esteem), Age, level of education, household size, access to extension services, social capital (for example, membership in community groups)
3. To assess the contribution of rapoko production to livelihoods and income generation of the marginalized groups.	Generalized Propensity Score (GPS) analysis	Rapoko output, household size, education, and access to markets,
4. To explore the cultural significance of the production of rapoko in rural areas	Thematic analysis (cultural significance framework)	Symbolic meaning, traditional practices, and social and cultural events

3.8 Ethical considerations

This research study involved human participants, and as such, it prioritized ethical considerations. Informed consent is crucial, ensuring participants understand the study's purpose, risks, and benefits

(Arifin, 2018). In this study, informed consent was obtained from all participants before data collection, and they were assured of confidentiality and anonymity.

The researcher ensured participants understood the study's purpose, methods, risks, and benefits. Participants' autonomy was respected, allowing them to withdraw without consequences. This aligns with fundamental research ethics principles, prioritizing participants' freedom to make informed decisions (Pietilä et al., 2019).

Confidentiality and privacy were maintained throughout the study. Participants were protected through pseudonyms, codes, and secure data storage. This approach ensured sensitive information was handled appropriately, protecting participants' identities (Hammer, 2017).

Another important ethical consideration in this study was the potential for harm to participants. Researchers have a responsibility to minimize harm to participants, and this includes physical, emotional, or psychological harm (Karunarathna et al., 2024). The researcher ensured that the study did not cause any harm to participants and that they were not placed in any situation that could cause them distress and discomfort.

In addition, the researcher ensured that the study was conducted with integrity and transparency. Researchers have a responsibility to conduct their research with integrity, and this includes being honest and transparent in their methods and findings (Arifin, 2018). The researcher ensured that the study was conducted in accordance with established research ethics and that the findings were reported accurately and honestly.

3.9 Summary

This chapter describes the research methodology used in the study, covering the research design, study site, sampling procedure, data collection and analysis methods, and ethical considerations in detail. The study utilized a specific research design to investigate the research questions, and a sampling procedure was employed to select participants and determine the sample size. Data collection methods and instruments were carefully chosen to gather relevant data, which was then analysed using appropriate statistical tests or thematic analysis. The chapter also highlights the ethical considerations taken to ensure the confidentiality, anonymity, and dignity of participants, demonstrating the researcher's commitment to conducting responsible and respectful research.

CHAPTER 4: RESULTS, ANALYSIS AND DISCUSSION

4.1 Introduction

The findings of the study on the role of women and youth in rapoko production and its impact on empowerment, livelihoods, and cultural significance are presented in this chapter. The chapter first describes the demographic characteristics of the respondents and then discusses the results of the data analysis in relation to the research objectives and hypotheses.

4.2 Demographic characteristics of respondents

4.2.1 Age

Table 4.1: Age distribution of respondents

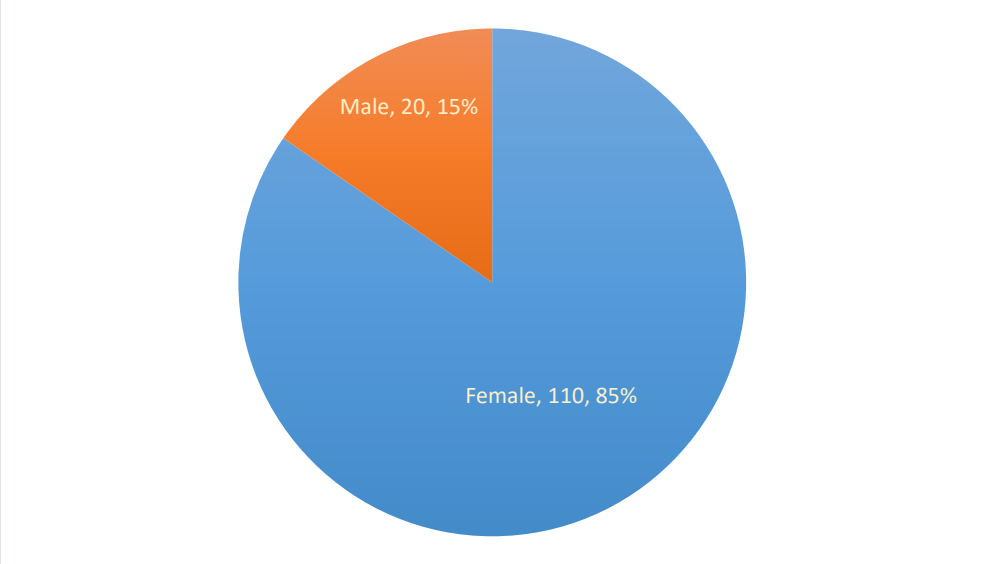
Age group	Frequency	Percentage
24 and below	33	25.40%
25-44	71	54.60%
45-64	20	15.40%
65 and above	6	4.60%
Total	130	100%

The results from table 4.1 shows that the majority of the participants (54.6%) are between 25-44 years old which indicates that rapoko production is dominated by adults in their prime working age. This age group is likely to have the physical ability and experience to engage in farming activities. On the other hand, the presence of 25.4% of respondents below 25 years suggests that some youth are involved in rapoko production which is a positive trend in as far as this industry is concerned. The relatively smaller proportion of respondents in the 45-64 years age group (15.4%) and 65 years and above (4.6%) indicates that older adults are less involved in rapoko production which is possibly due to declining physical ability. These findings have implications for the future of rapoko production as the involvement of youth in rapoko production could ensure the industry's sustainability and the dominance of adults in their prime working age could contribute to its productivity.

4.2.2 Gender

The pie chart on figure 4.1 reveals a significant dominance of women in rapoko production, accounting for 84.6% of the respondents which is not surprising given the study's deliberate focus on women and youth. This dominance can be attributed to the sampling methodology, which targeted women and youth involved in rapoko production. The significant involvement of women in rapoko production has important implications for targeted interventions. Development programs and policies can focus on

supporting women in rapoko production in order to provide them with tailored training, resources, and services. This could include initiatives aimed at improving agricultural productivity, enhancing access to markets, strengthening capacity to participate in decision-making processes, opportunities for economic empowerment, income generation, and improved livelihoods for women and their households.



Figure; 4.1 Gender distribution of respondents

4.2.3 Marital status

The results from figure 4.2 reveals a significant marital distribution that comprise of married participants dominating the sector at 76.9%, followed by widowed at 15.4%, and divorced or separated at 7.7%. The high proportion of married in rapoko production suggests that marriage may provide a level of social and economic stability, enabling especially women to engage in agricultural activities and contribute to their household's food security and income. The widowed who comprise 15.4% of the respondents may be involved in rapoko production due to the need to support themselves and their families after the loss of a spouse. Divorced or separated respondents who account for 7.7% may also be relying on rapoko production as a means of economic empowerment and independence.

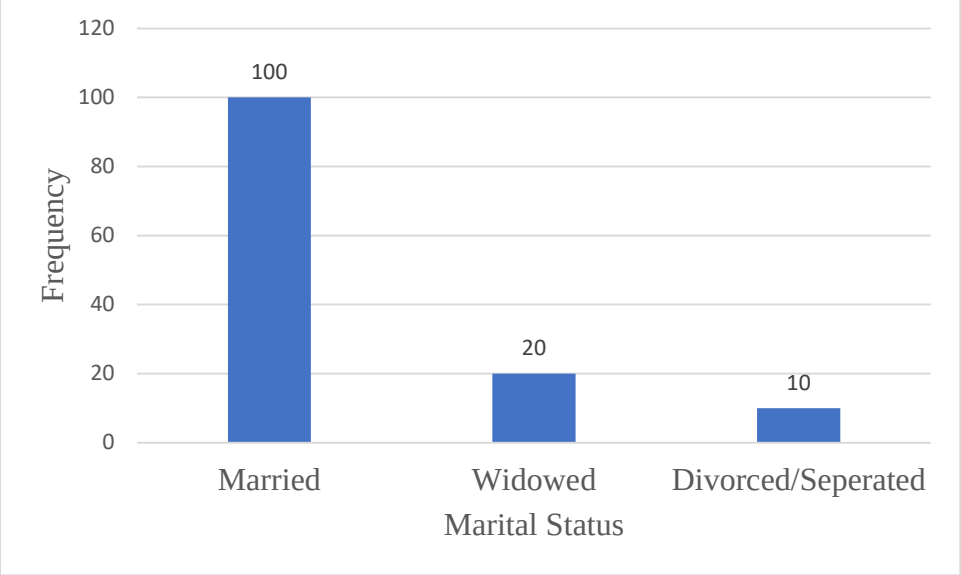


Figure 4.3: Marital status of respondents

4.2.4 Educational level

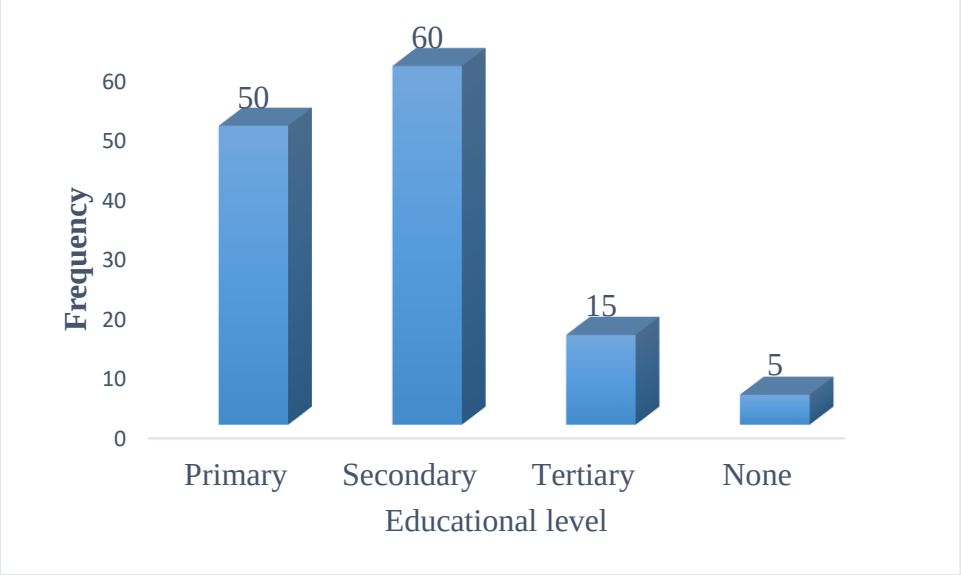


Figure 4.4: Educational level of respondents

Figure 4.4 shows the educational level of respondents in rapoko production which has the majority (46.2%) having secondary education, followed by primary education (38.5%), and a smaller proportion have tertiary education (11.5%) as well as a small percentage (3.8%) having no formal education. This distribution suggests that most respondents have a basic level of education which enables them to understand and implement agricultural practices. The relatively high percentage of respondents with secondary education may indicate that rapoko production is attracting women and youth with some level of formal education. The presence of respondents with tertiary education (11.5%) is notable, as

it may indicate that some women and youth in rapoko production have advanced knowledge and skills that could be leveraged to improve productivity and innovation. The small percentage of respondents with no formal education (3.8%) highlights the need for targeted support and training programs to enhance their skills and knowledge in rapoko production.

4.3 Results

4.3.1 The role of women and youth in rapoko production.

Table 4.2: Pearson correlation coefficients for rapoko output versus the other variables

Variable	Pearson´s (r)	p-value
Labor contribution	0.42	0.000
Decision making power	0.35	0.002
Ownership and control	0.28	0.015

Significance level; 1%***, 5%**, 10%*

The relationship between rapoko output and labour contribution shows a significant positive correlation which has a Pearson's r of 0.42 and a p-value of 0.000. This indicates that as labour contribution increases, rapoko output also tends to increase. This finding is consistent with agricultural productivity theories, which emphasize the importance of labour in crop production. However, in this context where the investigation focused on the role of youth and women in rapoko production, this finding suggests that increasing labour contribution from these groups can lead to improved productivity.

The youth and women bring numerous benefits which include the infusion of new ideas, energy, and adaptability from youth, which increase productivity and improve yields through their familiarity with technology and innovative farming practices. Women's knowledge and experience in crop production and management also contribute to better decision-making and more efficient use of resources. Furthermore, the increased labour availability from youth and women leads to more timely and efficient farming practices, such as planting, weeding, and harvesting. The diversification of skills and perspectives that youth and women bring also lead to more innovative and effective farming practices.

The correlation between rapoko output and decision-making power is also positive and significant showing Pearson’s r of 0.35 and a p-value of 0.002. This implies that as decision-making power

increases, rapoko output tends to increase as well. The results highlights the importance of empowering youth and women with decision-making authority in rapoko production. When youth and women are involved in decision-making processes related to farming, they make informed choices that optimize resource allocation, crop management, and marketing which can lead to better productivity outcomes. However, it is essential to consider the potential barriers to decision-making power, such as social and cultural norms, and develop strategies to address these challenges.

Rapoko output and ownership and control of resources by women and youth show a positive correlation that include a Pearson's r of 0.28 and a p-value of 0.015 which suggests that as ownership and control over resources increase, rapoko output also tends to increase. Therefore it is more important to secure access to and control over resources for youth and women in rapoko production. When these groups have ownership and control, they are more likely to invest in their farms, adopt new technologies, and manage resources effectively. However, the relatively weaker correlation coefficient compared to labour contribution and decision-making power may indicate that other factors, such as access to markets and credit among others which were not included in the study, also play a crucial role in determining rapoko output.

4.3.2 The impact of rapoko production on the empowerment of marginalized groups in rural areas.

The empowerment index is the dependent variable used in the model for this objective. It is a composite index based on the following variables; decision-making power in household affairs, decision-making power in community affairs, control over income and resources, social status and respect within the community as well as self-confidence and self-esteem. These variables are measured on a scale of 1-5, where 1 is the lowest and 5 is the highest. Therefore the empowerment index = (Decision-making power in household affairs + Decision-making power in community affairs + Control over income and resources + Social status and respect within the community + Self-confidence and self-esteem) / 5

Table 4.3: Descriptive statistic for the empowerment indicators

Variable	Mean	Std. Dev.
Decision-making power in household affairs	3.5	1.2
Decision-making power in community affairs	3.2	1.1
Control over income and resources	3.8	1.3
Social status and respect within the community	4.1	1.0
Self-confidence and self-esteem	4.3	0.9

Empowerment Index = (3.5 + 3.2 + 3.8 + 4.1 + 4.3) / 5 = 3.78 / 5 = 0.756

Table 4.4: Regression analysis results; determinants of empowerment

Variable	Coefficient	Std. Error	t-value	p-value
Rapoko Output	0.07***	0.010	7.000	0.000
Age	-0.003	0.002	-1.500	0.135
Education _Secondary	0.03***	0.005	6.000	0.000
Household Size	-0.01	0.010	-1.000	0.320
Extension Services	0.12***	0.040	3.000	0.003
Social Capital	0.18***	0.040	4.500	0.000
Access to Credit	0.10***	0.030	3.330	0.001
Constant	0.20***	0.100	2.000	0.046

Significance level; 1%***, 5%**, 10%*: R^2: 0.62, F-statistic: 15.60***, Observations: 130

The R-squared value of 0.62 indicates that the model explains approximately 62% of the variation in empowerment, suggesting a good fit. The F-statistic is also statistically significant ($F = 15.60$, $p < 0.001$), confirming the overall significance of the model. The regression analysis results reveal significant insights into the determinants of empowerment among marginalized groups involved in rapoko production.

The coefficient for rapoko output is positive and statistically significant ($\beta = 0.07$, $p < 0.001$) and this indicates that higher rapoko output is associated with increased empowerment. Rapoko production plays a crucial role in enhancing the economic and social well-being of individuals which contribute to their overall empowerment. The positive relationship between rapoko output and empowerment is attributed to the fact that higher output leads to increased income, which in turn enhances individuals' ability to make decisions, access better opportunities, and improve their socio-economic status.

Education in secondary level is another significant predictor of empowerment which has a positive coefficient ($\beta = 0.03$, $p < 0.001$). This shows that there is 0.03% likelihood for the women and youth who have secondary level of education to be empowered than those in primary level of education. Education equips individuals with the knowledge and skills necessary to navigate complex agricultural systems, make informed decisions about their livelihoods, and access better markets and services.

The results also show that access to extension services has a positive and significant impact on empowerment ($\beta = 0.12$, $p < 0.01$). Extension services provide individuals with access to critical information, technologies, and expertise that can improve their productivity and income. The positive relationship between access to extension services and empowerment highlights the importance of investing in extension services as a means of promoting empowerment among women and youth involved in rapoko production.

Social capital is also a significant determinant of empowerment, with a positive coefficient ($\beta = 0.18$, $p < 0.001$). Women and youth with stronger social connections and networks have higher levels of empowerment, possibly due to increased access to information, resources, and support. On the other hand, social capital can facilitate access to knowledge, inputs, and markets, and provide individuals with a safety net during times of crisis. Furthermore, access to credit has a positive and significant impact on empowerment ($\beta = 0.10$, $p < 0.01$) which stresses the importance of financial inclusion in enabling individuals to invest in their livelihoods and improve their economic well-being. Access to credit can provide individuals with the financial resources necessary to invest in inputs, technologies, and other activities that can improve their productivity and income.

In contrast, age and household size were not found to be significant predictors of empowerment. The coefficient for age is negative but not statistically significant ($\beta = -0.003$, $p = 0.135$), suggesting that age may not be a determining factor in empowerment among individuals involved in rapoko production. This could be due to the fact that rapoko production is a relatively accessible and manageable activity for individuals across different age groups. Additionally, older individuals may have more experience and knowledge about rapoko production, which could offset any potential negative effects of age on empowerment. Similarly, household size has a negative but non-significant coefficient ($\beta = -0.01$, $p = 0.320$) which shows that household size have not a substantial impact on empowerment in this context. This could be due to the fact that larger households may have more labour available for rapoko production, but may also have more mouths to feed, which could offset any potential benefits of larger household size.

4.3.3 The contribution of rapoko production to livelihoods and income generation of the marginalized groups.

Table 4.5: Generalized Propensity Score (GPS) analysis results

Variable	Coefficient	Std. Error	t-value	p-value
Rapoko Output	0.05***	0.010	5.000	0.000
Household Size	-0.01	0.010	-1.000	0.320
Education	0.03***	0.005	6.000	0.000
Access to Markets	0.10***	0.030	3.330	0.001

Significance level; 1%***, 5%**, 10%*

The Generalized Propensity Score (GPS) analysis reveals that rapoko output has a significant positive impact on livelihoods and income generation among marginalized groups. Specifically, the results in

table 4.5 show that a unit increase in rapoko output is associated with a 0.05 unit increase in livelihoods and income generation ($p < 0.001$). Therefore increasing rapoko production can lead to substantial improvements in the economic well-being of these households. This finding is consistent with the notion that agricultural production is a critical component of rural livelihoods, and that increasing production can have a direct and positive impact on household income and well-being.

Table 4.6: Dose-response function estimates

Rapoko Output	Livelihoods and Income Generation ($)
0-100 kg	0.20
101-200 kg	0.35
201-300 kg	0.50
301-400 kg	0.65
401-500 kg	0.80

The dose-response function estimates in table 4.6 show a clear positive relationship between rapoko output and livelihoods and income generation. Households with rapoko output between 0-100 kg have a livelihoods and income generation score of 0.20, while households with rapoko output between 401-500 kg have a score of 0.80. This indicates that rapoko production is a critical component of the livelihoods of marginalized groups and that increasing production can have a direct and positive impact on their economic well-being. Therefore, investing in agricultural productivity-enhancing interventions, such as irrigation and mechanization would support rapoko production and improve livelihoods.

Table 4.7: Marginal effects of rapoko output and other variables

Variable	Marginal Effect	Std. Error	t-value	p-value
Rapoko Output	0.05***	0.010	5.000	0.000
Education_secondary	0.03***	0.005	6.000	0.000
Access to Markets	0.10***	0.030	3.330	0.001

Significance level; 1%***, 5%**, 10%*

The marginal effects of rapoko output and other variables provide further insights into the relationships between these variables and livelihoods and income generation. According to table 4.7, the marginal effect of rapoko output is 0.05 ($p < 0.001$), indicating that a unit increase in rapoko output is associated with a 0.05 unit increase in livelihoods and income generation. Similarly, the marginal effect of education is 0.03 ($p < 0.001$), suggesting that an additional unit of education is associated with a 0.03 unit increase in livelihoods and income generation. Furthermore, the marginal effect of access to

markets is 0.10 ($p < 0.001$). This means that improved market access is associated with a 0.10 unit increase in livelihoods and income generation.

The significant relationship between rapoko output and livelihoods and income generation can be attributed to several factors, including rapoko production being a critical source of income for marginalized groups, contributing to food security, and providing financial resources for households to invest in other activities. This finding is consistent with studies on finger millet production, which have shown that it plays a crucial role in improving rural livelihoods and food security (Datta, 2023). For instance, Pandit et al. (2020) found that organic finger millet farming contributed significantly to rural livelihoods in Nepal, while Gebreyohannes et al. (2021) identified finger millet production as a key opportunity for improving food security and income generation in Ethiopia. Additionally, the labor-intensive nature of rapoko production creates employment opportunities, which is consistent with the literature on entrepreneurship and economic production (Dzingirai, 2021). Furthermore, rapoko's drought-tolerant characteristics make it an attractive crop for households vulnerable to climate-related shocks, which aligns with the literature on climate-resilient agriculture and the potential of finger millet to improve food security and nutrition (Mabhanda & Sibanda, 2025).

4.3.4 The cultural significance of the production of rapoko in rural areas

Symbolic Meaning

The thematic analysis of the cultural significance of rapoko production in rural areas revealed several key themes related to symbolic meaning. Rapoko holds significant symbolic meaning in rural communities. It represents resilience and adaptability in the face of challenging environmental conditions. This symbolic meaning is deeply deep-rooted in the cultural fabric of rural communities and plays a crucial role in shaping their identity and sense of belonging.

Rapoko production is also a symbol of cultural heritage as it represents a connection to the community's history and traditional practices. The crop has been passed down through generations, and its production is often tied to traditional knowledge and practices. This cultural significance is consistent with existing literature on the importance of traditional crops in preserving cultural heritage and promoting community resilience (Gebreyohannes et al., 2021).

Furthermore, rapoko production is often associated with community and cooperation, symbolizing the importance of collective action and mutual support in rural areas. The crop is often produced through

collective farming efforts, which fosters social bonds and cooperation among community members. This symbolic meaning highlights the importance of community-led initiatives and participatory approaches to agricultural development. The symbolic meaning of rapoko production also reflects the community's values and beliefs, such as the importance of food security and sovereignty. Rapoko is a staple crop that provides food security for rural households, symbolizing the community's ability to feed themselves and maintain control over their food systems.

Traditional Practices

One of the key traditional practices is the use of traditional tools, such as hoes, for land preparation. Farmers use these tools to till the soil, remove weeds, and prepare the land for planting rapoko seeds. This traditional method of land preparation is not only effective but also environmentally friendly, as it does not require the use of mechanized equipment or chemical fertilizers (Kauma, 2021). According to Kauma (2021), traditional farming practices, such as the use of hoes, have been used for centuries in Zimbabwe and are well-suited to the local context. The use of traditional tools also promotes manual labour, which is an essential aspect of rural livelihoods.

Another traditional practice used in rapoko production is crop rotation and intercropping. Farmers rotate rapoko with other crops, such as sorghum or maize, to maintain soil fertility and reduce pests and diseases. Intercropping rapoko with other crops also helps to promote biodiversity and increase crop yields (Mbanyele et al., 2022). Mbanyele et al. (2022) found that conservation agriculture practices, including crop rotation and intercropping, can improve finger millet productivity and soil water availability in semi-arid regions of Zimbabwe.

In terms of pest and disease management, farmers use traditional methods such as using plant extracts or ash to control pests and diseases. For example, some farmers use extracts from tobacco plants to repel pests that damage rapoko crops. Kugedera et al. (2021) highlighted the importance of indigenous knowledge systems in sustainable agricultural production in Zimbabwe, including the use of traditional pest control methods. These traditional methods are not only effective but also environmentally friendly, as they do not require the use of chemical pesticides.

Social and Cultural Events

One of the most significant social events associated with rapoko production is the harvest ceremony. During this ceremony, community members come together to celebrate the harvest and give thanks for the bounty of the land. The ceremony often involves traditional music, dance, and food, and is an

important occasion for socializing and strengthening community bonds. According to Kauma (2021), harvest ceremonies have been an integral part of Zimbabwean culture for centuries, and play a crucial part in upholding social cohesion and community identity.

Rapoko production is also closely tied to traditional rituals and ceremonies. Some communities perform rituals to ensure a good harvest, such as offering prayers to ancestral spirits or conducting ceremonies to appease the land gods. Kugedera et al., (2021) mentions that these rituals not only reflect the community's spiritual connection to the land but also serve as a way of passing down cultural knowledge and traditions from one generation to the next.

In addition to these spiritual and cultural significance, rapoko production also plays a role in promoting social cohesion and community identity. The production process often involves collective labor, where community members come together to help each other with planting, weeding, and harvesting. This collective approach to farming not only promotes social bonding but also fosters a sense of community and shared responsibility. The cultural significance of rapoko production is also reflected in the various traditional dishes and foods that are prepared using the crop. Rapoko is a staple crop in many Zimbabwean households, and is often used to make traditional dishes such as *sadza* or porridge as also supported by Sakadzo and Kugedera (2020).

4.4 Chapter summary

This chapter presents a comprehensive analysis of rapoko production in rural areas, covering its role in the lives of women and youth, its impact on the empowerment of marginalized groups, its contribution to livelihoods and income generation, and its cultural significance. The chapter reveals that women and youth play a vital role in rapoko production, and the crop has a positive impact on the empowerment of these marginalized groups. Additionally, rapoko production is found to contribute significantly to household income and livelihoods. The cultural significance of rapoko production is also highlighted as the crop holds symbolic meaning, deeply rooted in traditional practices, and closely tied to social and cultural events.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the key findings on the socioeconomic impacts of rapoko production on the empowerment and livelihoods of marginalized groups in Mutoko district, ward 10. It also presents conclusions drawn from the research, synthesizing the insights gained from the analysis. Furthermore, the chapter offers practical and actionable recommendations for policymakers, development practitioners, and stakeholders which aims to inform strategies that can enhance the benefits of rapoko production by marginalised groups.

5.2 Research summary

This study that examines the socioeconomic impacts of rapoko production on the empowerment and livelihoods of the marginalized groups addressed the persistent food insecurity and limited livelihood opportunities in rural areas of Zimbabwe, where rapoko production holds significant potential for improving the lives of marginalized communities. Despite its potential, rapoko production faces various challenges, including limited access to markets, inadequate support services, and the erosion of traditional practices. The research seeks to understand the role of rapoko production in supporting livelihoods, empowering marginalized groups, and preserving cultural heritage.

The primary objective is to examine the socioeconomic impacts of rapoko production on marginalized groups' empowerment and livelihoods, with a focus on investigating the role of women and youth, analysing its impact on empowerment, assessing its contribution to livelihoods and income generation, and exploring its cultural significance in rural areas.

This study is grounded in several theoretical frameworks, including Feminist Theory, Youth Development Theory, Empowerment Theory, Livelihood Development Theory, and Cultural Significance Theory. Feminist Theory is used to understand the role of women in rapoko production and the impact of the crop on their empowerment. Youth Development Theory informs the analysis of the role of youth in rapoko production and the potential of the crop to support their development. Empowerment Theory is used to examine the impact of rapoko production on the empowerment of marginalized groups. Livelihood Development Theory provides a framework for understanding the contribution of rapoko production to household income and livelihoods. Cultural Significance Theory

is used to explore the cultural significance of rapoko production, including its symbolic meaning, traditional practices, and social and cultural events.

This study used a mixed-methods approach, combining quantitative and qualitative methods to gain a comprehensive understanding of rapoko production in rural areas. Descriptive statistics analysed respondent characteristics and the role of women and youth, while ordinary least squares regression analysis examined the impact of rapoko production on marginalized groups' empowerment. Generalized propensity score analysis was used to assess the contribution of rapoko production to livelihoods and income generation. Thematic analysis was used to explore the cultural significance of rapoko production which included its symbolic meaning, traditional practices, and social and cultural events.

The study revealed that labour contribution has a moderate positive correlation ($r = 0.42$, $p < 0.001$) with rapoko output, indicating that increased labour input, likely from women and youth, contributes significantly to higher rapoko yields. Decision-making power also shows a positive correlation ($r = 0.35$, $p < 0.01$) with rapoko output, suggesting that women and youth who are involved in decision-making processes tend to have a greater impact on rapoko production. Furthermore, ownership and control has a weak to moderate positive correlation ($r = 0.28$, $p < 0.05$) with rapoko output which implies that women and youth who have ownership and control over rapoko production tend to have better production outcomes.

The study evaluated the impact of rapoko production on empowerment, revealing moderate to high empowerment levels across various indicators, including decision-making power, control over income, social status, and self-confidence, with an Empowerment Index of 0.756. Regression analysis showed that rapoko output, secondary education, extension services, social capital, and access to credit significantly positively influenced empowerment, while age and household size had no significant effect. The model explained 62% of the variation in empowerment and was a good fit, indicating that rapoko production, along with these factors, enhances empowerment.

The study also examined the contribution of rapoko production to livelihoods and income generation among marginalized groups using Generalized Propensity Score (GPS) analysis. The results showed that rapoko output has a significant positive impact on livelihoods and income generation, with a unit increase in rapoko output associated with a 0.05 unit increase in livelihoods and income generation ($\beta = 0.05$, $p < 0.001$). The dose-response function estimates revealed a clear positive relationship between

rapoko output and livelihoods and income generation, showing that households producing 401-500 kg of rapoko have a livelihoods and income generation score of 0.80 compared to 0.20 for those producing 0-100 kg. The marginal effects analysis further confirmed the significant positive relationships between rapoko output ($\beta = 0.05$, $p < 0.001$), education ($\beta = 0.03$, $p < 0.001$), and access to markets ($\beta = 0.10$, $p < 0.001$) and livelihoods and income generation. These findings suggest that rapoko production is an important component of rural livelihoods and that increasing production can have a direct and positive impact on household income and well-being.

Rapoko production holds significant cultural significance in rural communities, symbolizing resilience, adaptability, and cultural heritage, while also representing community and cultural cooperation. The crop is deeply ingrained in traditional practices, such as the use of traditional tools, crop rotation, and intercropping, and is associated with social and cultural events, including harvest ceremonies, traditional rituals, and ceremonies. Rapoko production promotes social cohesion and community identity through collective labour and shared responsibility, and is reflected in traditional dishes and foods which shows its importance in preserving cultural heritage and promoting rural livelihoods, food security, and cultural preservation.

The importance of supporting rapoko production helps to promote empowerment, livelihoods, and income generation among marginalized groups. The positive impact of rapoko production on empowerment and livelihoods suggests that investing in agricultural productivity-enhancing interventions, such as extension services, access to credit, and market access have a direct and positive impact on household income and well-being. Furthermore, the cultural significance of rapoko production highlights the need for culturally sensitive and community-led approaches to agricultural development, which prioritize traditional practices and knowledge. Policymakers and development practitioners should prioritize support for rapoko production. These includes access to markets, extension services, and resources, to improve the lives of rural communities and promote sustainable agricultural development, cultural preservation, and community resilience.

5.3 Conclusions

The first objective was to investigate the role of women and youth in rapoko production. The study found that women and youth play a significant role in rapoko production, with labour contribution, decision-making power, and ownership/control having positive correlations with rapoko output.

Increased labour input, decision-making power, and ownership/control contribute to higher rapoko yields and better production outcomes.

The second objective was to analyse the impact of rapoko production on empowerment. The study concluded that rapoko production has a positive impact on empowerment as rapoko output, secondary education, extension services, social capital, and access to credit were significant determinants of empowerment. Rapoko production contributed to increased empowerment among respondents, particularly in decision-making power, control over income/resources, social status/respect, and self-confidence/self-esteem.

The third objective was to assess the contribution of rapoko production to livelihoods and income generation. The research found that rapoko production has a significant positive effect on livelihoods and income generation, with a unit increase in rapoko output associated with a 0.05 unit increase in livelihoods and income generation. Rapoko production is a critical component of rural livelihoods, and increasing production have a direct and positive impact on household income and well-being.

The fourth objective was to explore the cultural significance of rapoko production. The study revealed that rapoko production holds significant cultural significance in rural communities, symbolizing resilience, adaptability, and cultural heritage. The crop is deeply ingrained in traditional practices and is associated with social and cultural events, promoting social cohesion and community identity. Rapoko production is also essential for preserving cultural heritage and promoting rural livelihoods, food security, and cultural preservation.

5.4 Recommendations

Based on the findings, it is recommended that policymakers and agricultural development stakeholders prioritize initiatives that support women and youth in rapoko production. This can be achieved by providing training and capacity-building programs that focus on improving labour productivity, decision-making skills, and ownership/control over rapoko production. Additionally, stakeholders should ensure that women and youth have access to resources such as land, credit, and markets to enable them to fully participate in and benefit from rapoko production.

To build on the positive impact of rapoko production on empowerment, it is recommended to invest in initiatives that promote rapoko production, particularly among women and youth. This can include

providing extension services, access to credit, and social capital-building programs that support rapoko farmers. Furthermore, stakeholders should prioritize initiatives that promote secondary education, as this was found to be a significant determinant of empowerment.

Given the significant positive impact of rapoko production on livelihoods and income generation, it is recommended to prioritize initiatives that support rapoko production, cultural and market-based interventions. This can include investing in agricultural productivity-enhancing technologies, improving market access, and promoting education and training programs that support rapoko farmers.

It is also recommended to prioritize initiatives that support the preservation of traditional practices and cultural events associated with rapoko production. These include promoting cultural festivals and events, supporting traditional knowledge and practices, and ensuring that rapoko production is integrated into local cultural and identity-building initiatives.

5.5 Areas for further research

Further studies could explore several areas which includes the microbial and biochemical developments involved in rapoko fermentation, market participation and choice of marketing outlets among smallholder farmers, the historical and cultural significance of rapoko production and marketing, the development of value-added products from rapoko, and the nutritional and ant-proliferative potential of rapoko grains. These areas of research provide valuable insights into improving rapoko production, processing, and marketing, as well as promoting its economic potential and nutritional benefits.

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APPENDICES

Survey Questionnaire

Introduction

Good morning/afternoon, my name is Gungurukwa Moses and I am conducting a survey on the study entitled “Socioeconomic impacts of rapoko production on the empowerment and livelihoods of the marginalized groups” in this area. The purpose of this survey is to gather information on the production and marketing of rapoko, as well as its impact on livelihoods and empowerment. Your participation is voluntary, and all information collected will be kept confidential. Please answer the questions to the best of your ability.

Section A: Demographics

1. What is your age? _____

2. What is your gender? □ Male □ Female

3. What is your level of education? □ None □ Primary □ Secondary □ Tertiary

4. What is your marital status? □ Single □ Married □ Divorced □ Widowed

5. What is your household size? _____

6. What is your primary occupation?

□ Farming □ Business □ Employed □ Other (specify) _____

Section B: Rapoko Production

1. Do you grow rapoko? □ Yes □ No

2. If yes, how many hectares of land do you allocate to rapoko production? _____

3. What is your average rapoko yield per hectare? _____

4. How many years have you been growing rapoko? _____

5. What are the main challenges you face in rapoko production? □ Lack of seeds □ Lack of fertilizers □ Pests and diseases □ Drought □ other (specify) _____

Section C: Labor Contribution

1. Who is primarily responsible for rapoko production in your household? □ Male □ Female

2. How many hours per week do you spend on rapoko production? _____

3. How many family members are involved in rapoko production? _____

4. What tasks are they involved in? □ Planting □ Weeding □ Harvesting □ Processing □ other (specify) _____

Section D: Decision-Making Power

1. Who makes decisions regarding rapoko production in your household? □ Male □ Female □ Both

2. Do you have control over the income generated from rapoko sales?□ Yes □ No

3. How do you make decisions regarding the use of income from rapoko sales?

□ Alone □ With spouse □ With other family members □ Other (specify) _____

Section E: Ownership and Control

1. Do you have ownership of the land used for rapoko production? □ Yes □ No

2. Do you have control over the rapoko produce? □ Yes □ No

3. How do you make decisions regarding the sale of rapoko produce?

□ Alone □ With spouse □ With other family members □ Other (specify) _____

Section F: Empowerment

1. How do you rate your decision-making power in household affairs?

□ Very low □ Low □ Moderate □ High □ Very high

2. How do you rate your control over income and resources?

□ Very low □ Low □ Moderate □ High □ Very high

3. How do you rate your social status and respect in the community?

□ Very low □ Low □ Moderate □ High □ Very high

Section G: Livelihoods and Income Generation

1. What is your average annual income from rapoko sales? _____

2. How does rapoko production contribute to your household income?

□ Very significantly □ Significantly □ Moderately □ Slightly □ Not at all

3. What are the main uses of income generated from rapoko sales?

□ Food □ Education □ Health □ Savings □ Other (specify) _____

Section H: Access to Markets and Services

1. Do you have access to markets for your rapoko produce? □ Yes □ No

2. How do you sell your rapoko produce?

□ Directly to consumers □ Through middlemen □ Through markets □ Other (specify) _____

3. Do you have access to extension services for rapoko production? □ Yes □ No

4. Have you received any training on rapoko production and marketing? □ Yes □ No

5. Do you have access to credit facilities for rapoko production? □ Yes □ No

Section I: Social Capital

1. Are you a member of any farmer's organization or group? □ Yes □ No

2. If yes, what type of organization or group?

□ Farmer's cooperative □ Marketing group □ Savings group □ Other (specify) _____

3. How often do you interact with other farmers or members of your organization/group?

□ Daily □ Weekly □ Monthly □ Rarely □ Never

Section J: Livelihoods and Well-being

1. How has rapoko production affected your household's food security?

□ Improved significantly □ Improved slightly □ No change □ Worsened slightly □ Worsened significantly

2. How has rapoko production affected your household's income?

□ Increased significantly □ Increased slightly □ No change □ Decreased slightly □ Decreased significantly

Section K: Conclusion

1. Do you have any additional comments or suggestions regarding rapoko production and marketing?

_____

2. Would you like to receive feedback on the results of this survey? □ Yes □ No

Thank you for taking the time to participate in this survey! Your responses will contribute significantly to our understanding of rapoko production and its impact on livelihoods and empowerment.

Question checklist

Cultural Significance of Rapoko Production Interview Guide

1. Can you tell me about the cultural significance of rapoko in your community?

2. How is rapoko production tied to traditional practices and customs?

3. What role does rapoko play in your community's identity and heritage?

4. Are there any specific rituals or ceremonies associated with rapoko production?

5. How do you think rapoko production contributes to social cohesion and community relationships?

6. Can you share any stories or anecdotes about the cultural importance of rapoko in your community?