

# BINDURA UNIVERSITY OF SCIENCE EDUCATION



## DEPARTMENT OF AGRICULTURAL ECONOMICS, EDUCATION AND EXTENSION

DESERTATION

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**FACTORS CONTRIBUTING TO FOOD INSECURITY IN MUTARE DISTRICT,  
ZIMBABWE**

BY:

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May 2023

## **RELEASE FORM**

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## **APPROVAL FORM**

The undersigned certified that they have supervised and recommended to Bindura University of Science Education for acceptance of dissertation entitled '**The factors contributing to food insecurity in Mutare district, Zimbabwe.**' submitted in partial fulfillment of a Master of Science Degree in Food Security and Sustainable Agriculture.

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## DECLARATION

I hereby declare that the research project entitled “**The factors contributing to food insecurity in Mutare district, Zimbabwe**” 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 Mafuse** 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.

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**Date**

**: May 2023**

## DEDICATION

I dedicate my hard work to my family, friends and lecturers who were my source of strength and motivation.

## ACKNOWLEDGEMENTS

Producing such a project, requires assistance and guidance from many different individuals. I wish to express my gratitude to all who helped me to make this project a success. This work would not have been possible without encouragement, support and guidance from my academic supervisor Dr Mafuse. Thank you.

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## ABSTRACT

*Food insecurity is caused by various factors including lack of farming land, unfair trade, land grabbing, exponential population growth, biofuels, natural disasters, climate change, poor policies, poor food systems and postharvest food wastages. Food insecurity is described as lack of continuous access to sufficient food for a healthy and active lifestyle. In Zimbabwe the rural poor mostly suffer the effects of food insecurity as they rely mostly on rain-fed agriculture as a source of livelihood. The purpose of the study is to analyse factors contributing to food insecurity in Mutare district, Zimbabwe. Furthermore, the goal of this study is to both increase awareness of food insecurity in the country and push for solutions to this growing problem. Data was collected from 369 systematic randomly sampled participants using a structured questionnaire. Demographic, socio-cultural, innovations, economic and ecological factors were analysed using descriptive statistics.*

*From the results 72.5% of the households in Mutare district are food insecure. This has been attributed to 51.8% lack of use of improved technologies to boost productivity as well as 93.2% relying on unpredictable rains. This is further worsened by the poorly fertile fields (89.2%) and the conventional mindset of producing maize (100%) which is the staple, regardless of the climatic and ecological feasibility. 89.2% lacking access to financial services and only 10.8% practicing other off-farm enterprises are also limiting factors to food security in Mutare district. Rural households are still banking on agriculture for their livelihoods despite its uncertainties. Households with members engaging in off-farm activities have proven to be more stable with regards to food access than those who are not. There is therefore need to engage the local communities with regard to climate smart agriculture, local food systems, and indulgence in off-farm activities.*

*In addition, communities need to specialize in production of climatic and ecologically feasible crops and livestock to establish a food system and to base on trade for preferred food commodities.*

**Keywords:** Agriculture, Food insecurity, income, Off-farm activities, production

## **LIST OF ACRONYMS AND ABBREVIATIONS**

AGRITEX	Agricultural Technical and Extension Services
CARE	Cooperative for American Relief Everywhere
CFU	Commercial Farmers' Union
DDC	District Development Committee
DDF	District Development Fund
GDP	Gross Domestic Product
GoZ	Government of Zimbabwe
FAO	Food and Agricultural Organization
GMB	Grain Marketing Board
ICT	Information and Communication Technology
IPC	International phase classification
LSCF	Large Scale Commercial Farmers
NGO	Non-governmental organisation
ZFU	Zimbabwe Farmers' Union
ZIMVAC	Zimbabwe Vulnerability Assessment Committee

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Food insecurity is caused by various of factors including lack of farming land, unfair trade, land grabbing, exponential population growth, biofuels, natural disasters, climate change, poor polices, poor food systems and postharvest food wastages. Food insecurity is described as lack of continuous access to sufficient food for a healthy and active lifestyle. People all over the world suffer from food shortages and cannot tell if they will be able to feed themselves the next day. This is the basis of defining food insecurity. There is a thin line between hunger and food insecurity and they have a cause-effect relationship hence mostly mistaken. Not only people living below the poverty line experience food insecurity because those living above the poverty line could also experience food insecurity. Food insecurity has life-threatening consequences. It increases the likelihood of hospitalization in children owing to malnutrition and respiratory infections. Food insecurity is also linked to poor physical health, which keeps children from fully participating in everyday school activities and social interactions with their agemates. In a larger sense, food insecurity leads to hunger, higher food prices, increased health-care expenditures, unemployment, reduced GDP and violence, among other things (Clover, 2003).

African subsistence farmers are known to be dependent on land as a source of food and household income, but they face major constraints in agriculture such as effects of climate change, inadequate rainfall, inadequate water facilities and, lack of land tenure rights (Backeberg and Sanewe, 2010). Land remains the main source of food consumption for households in Africa and food security has shifted towards issues surrounding access to and control of land (Fonjong et al., 2010). Currently, 2.61 million people (27% of the analyzed population) in rural Zimbabwe are facing high levels of acute food insecurity (Integrated Food Security Phase Classification (IPC) Phase 3 or above), while nearly 2.9 million people (29%) are in Stressed (IPC Phase 2). The food insecurity is primarily due to shocks and hazards experienced in the country such as drought, reduced livelihood opportunities due to restrictions linked to COVID-19, pests and diseases, and high food prices.

Covid 19 nationwide lockdown has immensely contributed towards massive joblessness in urban areas. In rural areas, hunger is accelerating, as unemployed migrants return to their

villages, without the vital remittances they once provided. According to World Food Program (WFP) (2019), subsistence farmers make up three-quarters of Zimbabwe's population and produce most of its food. Rural areas are commonly characterized by food insecurity, which is a violation of human rights since every human being has the right to food on a daily basis (Shisanya and Hendriks, 2014). An uncertain food supply, problems with food quantity and quality, running out of food, lacking money to buy food, skipping meals and ongoing hunger are all elements of being food insecure, thus people in the rural areas develop livelihood strategies to survive (Ihab et al., 2013).

In 2019, Cyclone Idai caused damage and destruction to crops which resulted in food insecurity. Chimanimani, Chipinge and Mutare districts (Manicaland Province) were declared a state of national disaster. According to reports, 172 fatalities were confirmed, 4,884 people displaced, 327 missing and at least 53,999 people were believed to have been affected. Cyclone affected areas are also significantly affected by the drought in addition to the deteriorating macro-economic situation. Tinarwo, 2021 highlighted that, the lack of resilient food systems approach is also contributing to food insecurity. There is need not only to have the potential to bounce back swiftly from shocks, but also cushion deprived households from shocks by building their livelihood strategies. In Zimbabwe, this requires first getting out of the food crisis through resilience-focused programming and then putting the national policy system on the resilience-building agenda.

To achieve food security, food systems must be inclusive of smallholder farmers as well as traditionally-excluded groups like women, youth and people with disabilities in decision-making, assisting them to form and strengthen their livelihood strategies and ownership of reproductive assets. Food systems need to promote the production of healthy, nutritious, safe and affordable foods to consumers. Poor market infrastructure takes a huge toll in achieving food security. Nutrition education is another area with immediate benefits to the vulnerable and pregnant and lactating mothers and their children. Policies such as presidential input scheme, command agriculture etc. which lacks context specificity in terms of promotion of small grains and small livestock and avoiding blanket provision of maize production inputs across all-natural farming regions is another contributing factor (Tinarwo, 2021).

## **1.2 Statement of the research problem**

Food insecurity is a multi-faceted issue that has impacted low-income populations around Zimbabwe and around the world for many years. It is a topic that is often misunderstood, as many people believe that it centers around hunger. In reality, although hunger is one of the key components of this problem, food insecurity encompasses other factors such as the affordability of food, the cultural and religious appropriateness of food, the availability of healthy and nutritional food and enabling policies.

Due to the variance in experiences among food insecure people, the issue is situational rather than universal. This misconception that food insecurity is the same as hunger often ignores the context specificity of experiences among communities. Hence, the solutions offered often do not address the etiology of the problem. Though food insecurity impacts people all over the country, Mutare district is one place of interest. Despite it having a huge claim in the mining industry, estates, plantations, farms under irrigations, game area and being a border town, food insecurity still prevail in the district. Therefore, the study seeks to investigate the climatic, environmental and socio-economic factors contributing to food insecurity.

## **1.3 Objectives of the study**

### **1.3.1 Main objective**

The purpose of the study is to analyse factors contributing to food insecurity in Mutare district, Zimbabwe. Furthermore, the goal of this study is to both increase awareness of food insecurity in the country and push for solutions to this growing problem.

### **1.3.2 Specific objectives**

1. To establish the effect of economic, social, cultural and ecological factors on household food insecurity in Mutare district.
2. To determine the influence of modern farming and innovation technics on household food insecurity in Mutare district.

## **1.4 Research question**

- i. How does economic, social, cultural and ecological factors affect household food insecurity in Mutare district.?

- ii. How does modern farming and innovation technics influence household food insecurity in Mutare district?

## **1.5 Significance of study**

Mkandawire and Matlosa (2003) discussed the importance of studying food security. They argued that the task of poverty eradication, which is at the root of food insecurity at household level, should not be left to governments only. Hence scholars and researchers have a role to play, not simply as commentators of food insecurity but as providers of alternative intervention strategies.

This study is significant because it can provide more information on the levels of food insecurity in Mutare district communities. As a result of discovering potentially high levels of low or very low levels of food insecurity, recommendations can be advised to remedy these problems, ensuring optimal human growth and development of these residents by access to one of the most basic elements of life, food. It is projected that in Zimbabwe during the peak hunger period (January to March 2022), an estimated 27% of the rural households will be cereal insecure. The 27% of rural households will translate into approximately 2,942,897 individuals requiring 262,856 metric tons of cereal (Maize Grain) (FNC, 2021). According to the Zimbabwe Vulnerability Assessment Committee (ZIMVAC) 2021 survey, Mutare district was amongst the top 30 districts in Zimbabwe which were cereal insecure during the peak hunger period. Therefore, Mutare district's food security situation remains fragile.

It is therefore imperative that food insecurity gets addressed appropriately by studying the factors contributing to food insecurity and recommend on which sector to give more focus on. Furthermore, communal farmers are important players in alleviating household food insecurity by increasing household food access, and availability through their subsistent own crop production. Not much has been documented on the status of household food production, household food consumption patterns and household sources of food among communal farmers in Zimbabwe. Due to the aforementioned observation, the study to analyse factors contributing to food insecurity in Mutare district (Zimbabwe) is deemed necessary in a bid to attain food security.

## **1.6 Scope of the study**

Notwithstanding the fact that the study may refer to other places and contexts, the focus of this study is to analyse factors influencing food insecurity in Mutare district, Zimbabwe.

## **1.7. Outline of the Study**

This study is packaged into five chapters. This first chapter presented a background to the study, the statement of the problem, the research objectives as well as the research questions. The second chapter focuses on critically reviewing literature on the concepts under study. It focuses on the contribution of other studies. The third chapter addresses the methodological processes of the research. It outlines how the research study was carried out from the research approaches, paradigms, sampling as well as the data collection process. Chapter four is concerned with the presentation of results and discussion of findings. Chapter five which is the final chapter, presents the summary of the entire study, captures the main findings and conclusions as well as proffer recommendations.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter outlines the factors that affect food security which exists in related literature. It brings out the various factors that have affected food security in some parts of Zimbabwe. The factors include Economy, ecological, Innovation and social cultural factors. A conceptual frame work is also presented to show the relationship between the dependent and Independent variables. Food security has three distinct variables: food availability measured by food production and food supply, food access measured by the level of income; and food utilization measured by nutrition, health and care giving. Households will be considered to be food secure if it had access to food either because it produced enough food for its consumption or if it had sufficient income to purchase it. A shift in spending on food items to spending on non-food items such as funerals and hospital bills may be a threat to food security. Similarly, a reduction in household income may threaten the household's purchasing power and thus its food security.

According to the United Nations Universal Declaration of Human Rights 1948 “everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing and medical care.”. The right to an adequate standard and wellbeing regarding food implies right to adequate food, freedom from hunger and the ability to acquire food and improve conditions that helped to develop and sustain food security [Article25(1)] (UNDPIC 1998). This chapter contains the review of the literature based on the four main themes in this study. The themes are the political, economic, innovation, social cultural factors influencing food security.

##### **2.1.1 Contextualisation and rationale food security**

This section reviews definitions of food insecurity and its related features. Food security is discussed in terms of its origins and trends. Within the context of the definition of food security, food availability, food access, food utilization and stability are explained.

The definitions of food insecurity cover from global, national and household-level availability of food trends. The use of the term, food security, at national and global level

emphasize supply of food. However, availability of food at the national level does not assure access and enough energy for a health and nutritional diet per capita. Thus, “access” has been included - focusing on availability and ability of a household to access food.

Within the context of the definition of food security, three distinct variables stand out as central to its attainment. These are availability, access and utilization. Food availability is achieved when sufficient quantities of food are consistently available to all individuals within a country (Riley et al., 2009). Food access is assured when households and all individuals within them have adequate resources to obtain adequate foods for a nutritious diet (Riley et al., 2009). Food utilization refers to the proper biological use of food, requiring a diet that provides sufficient energy and essential nutrients, potable water and adequate sanitation (Riley et al., 2009).

In sub-Saharan Africa, the proportion of undernourished people has decreased in the last two decades, but the numbers of hungry people have been rising (FAO, 2009). World Food Program (WFP) and FAO missions undertaken in the Southern African Development Community (SADC) region in 2002 showed that 14 million people were living on the brink of starvation and faced serious food shortages (WFP/FAO, 2002). In 2010, the Millennium Development Goal Report showed that the number of people in developing region living on less than \$1.25 a day was reduced from 1.8 billion in 1990 to 1.4 billion in 2005 (U.N, 2010).

The 2005 World Bank estimates showed that 50.9% of sub-Saharan African people lived below the international poverty line (\$1, 25 per person per day) (World Bank, 2007). In most countries in sub-Saharan Africa, poverty results from various factors that include unemployment, limited access to productive resources, poor policies, poor governance, high population and persistent droughts. The number of food-insecure people doubled during the 1980s from about 22 million people in 1979/81 to 39 million in 1990/92 (Drimie and Mini, 2003). A close correlation was found to exist between the number of hungry people and poverty (Rahman, 2006). Clover (2003) argued that hunger was a political creation, requiring a political solution.

The food situation in the country is characterized by cereal insecurity which stands at about 27% of the households in Zimbabwe. Furthermore, about 77% of the households are below the Food Poverty datum Line and unable to meet basic food requirements. Approximately 93% of the households are below the Total Consumption Poverty Line (WFP, 2019). The access arm of food security is mostly affected by the economy as a whole. Meanwhile, fuel

scarcity continues, Inflation escalating in all sectors, cash liquidity challenges worsening, inadequate energy supply aggravated poor food systems and Incapacitated social safety nets. On the other hand, prohibitive cost of agricultural inputs is taking a huge toll on food availability (FAO,2010).

Zimbabwe's arable land surface is relatively small compared to major food producers in Africa, but its agriculture was rather well performing from 1961 to 2001 (up to 10% of African maize production in 1985). There are five natural regions that make up the agriculture of Zimbabwe. The first three regions are used for producing crops. Most maize and staple food was produced by small scale communal farms, while larger commercial farms focused on cash crops like tobacco, paprika, fruits, flowers, avocados, sugar cane, macadamia and beef exports. Household food production for rural populace include crops like maize, sorghum, rapoko, bananas, soy, barley, cotton, cassava, groundnuts, round-nuts, sweet potatoes and beans. Cattle are very important for communal farmers, more so in the low rainfall areas. They represent a more viable production system than crops and are used as a form of draught and of financial security. Goat production is also very important in low rainfall areas, including other small livestock like chickens, turkeys, pigs, rabbits, and Guinea fowls (Ministry of Lands, Agriculture & Rural Resettlement, 2018).

Given the limitations of crop and livestock production food access is achieved through diversified livelihood activities. In Mutare rural, few are formally employed, while some indulge in farm and estate working, building, carpentry, welding, and herbalism. Most of these activities are local, and linked to the economy in the area. Natural resource-based such as fishing, woodcarving, wild food harvesting, palm products/basket making, and illegal mining are still prevalent. Remittances tend to be another source of income which is cushioning households from food insecurity (FEWSNET, 2018).

During stressful times of food insecurity, communities strategizes a way of living which they don't usually resort to when things are in good state. In the initial phases of difficulty, tendency to reduce meal portions, go the whole day without food, sale of labour and use of available resources such as savings, are the most common. As the situation worsens, sending some members of the family to other relatives, cross border trading, sale of small stock; barter exchange and even begging is established. Finally, sale of productive assets such as large stock, implements and non-productive assets but difficult to replace assets, such as valuable roofing material in the form of asbestos sheets occur (Shumba, 2011).

### **2.1.2 Economic Factors and Food Security**

FAO (1999) reports that employment in off-farm and non-farm activities are essential for diversification of the sources of farm household's livelihoods. It enables households to modernize their production by giving them an opportunity to apply the necessary inputs, and reduces the risk of food shortage during periods of unexpected crop failures through food purchases. Rural off-farm income generating activities have a paramount significance to diversify the sources of livelihoods. Simatele (2006) reveals that income from these off-farm activities is also invested in agriculture to increase production and food availability at the household level. A study by Herbert (1996) in Burundi reveals that there is a tendency towards income diversification through extra-agricultural activities which complement farming. Households diversify their incomes by working as daily laborers, petty traders, artisans, and by working as daily building laborers. A hypothesis that is often raised in the literature is that wealth, assets ownership (e.g. land, livestock) and income is a good predictor of food security (e.g. Iram and Butt 2004; Feleke et al., 2005; Kidane et al., 2005; Babatunde et al., 2008). A household with resources is expected to withstand shocks in production or prices that create food shortages.

Markets are necessary to boost productivity and availability for food improved access to agricultural input markets such as seed and fertilizer is crucial for productivity growth. Moreover, farmers will only increase production if they have access to viable markets for their agricultural output. In Kenya, markets and trade are critical in bridging the consumption gap caused by structural deficiency in the production of major cereals and pulses by enabling food distribution from surplus to deficit areas (KFSSG, 2008). In regions like sub-Saharan Africa, where 70 percent of the population relies on agriculture for their livelihood and 80 percent of all the farms are less than 2 acres in size poor small-scale farmers can turn their surpluses into income only if they have the ability to access markets (IFPRI, 2002). Increased incomes in turn increase food security and help alleviate poverty. It is important for the government and policy makers to have in-depth understanding of the market systems including, their degree of market integration, and the characteristics of market participants, state of infrastructure, available services and relationships 16 among others (Megan and Patricia, 2009). This is crucial in evaluating and consistent monitoring of the food security status in any region. Market is therefore viewed to play an important role in food security as it determines the level of food distribution from surplus to deficit regions, commodity prices and incomes from sale of productive resources (KFSSG, 2008). Integration of spatially

separated markets ensures that a regional balance occurs between food deficit and food-surplus areas. Markets that are isolated may convey inaccurate price information that might distort producer marketing decisions and contribute to inefficient product movements resulting to food deficit or high prices. Such information is quite crucial for the formulation of intervention strategies to prevent food insecurity (Goletti and Babu, 1994).

Increased incomes from agricultural yield motivate farmers to invest in their natural resource base, however despite the growing enthusiasm about market orientation for increasing domestic food security and improved income, the transition towards producing for market is not only complex but also constrained by a range of biophysical and economic factors (Kaari and Ashby, 2004). It has been argued that the management of agricultural market reform requires an understanding of the operation of local markets, the strategies and responses of private traders, and how they both relate to changes in the institutional and policy environment of markets (Kherallah et al., 2002). Such an understanding is crucial to the design, implementation, and evaluation of marketing policies, institutions, and marketing infrastructure required for the development of grain markets. The key challenge now is to move beyond market liberalization to the issue of how to design input and output markets to catalyze small-scale productivity and income growth (Jayne et al., 2002). Per capita aggregate production, a factor affecting food security status of households, is expected to influence the food security status of households through the price effect.

The fall in food prices in local markets following an increase in per capital aggregate production is expected to influence the incomes of households whose income is dependent on the sale of food crops. The effect of this on the food security status of households is dependent on the price elasticity of demand (Foster, 1992). If price is inelastic, lower price translates into lower farm incomes which adversely affect the food security status of households. Per capital aggregate production was computed by converting the output of different cereals in to their respective wheat equivalent units. Recently, the global rises in prices and droughts have had drastic effect on household food security in Kenya. In April, 2008, about 3.5 million people in the country were reported to need emergency food aid (USAID, 2009). At the same time, the inflation rate on food reached 44.2 percent, the highest increase rate among all commodities. The effect was a rise in overall food insecurity to a predicted 70 percent of the population (OCHA, 2008).

Farm size in this study refers to the land area that will actually be used for crop production during the survey year. Farm size positively and significantly relates to the probability of a household being food secure. According to Van Der Vee (2010), food production can be increased extensively through expansion of areas under cultivation. With large farm size households can produce more and also diversify. According to Najafi (2003), food production can be increased extensively through expansion of areas under cultivation. Therefore, under subsistence agriculture, holding size is expected to play a significant role in influencing farm households' food security.

Worldwide experience in agricultural development has provided much evidence that fertilizer application is the most efficient measure for sustainably increasing crop production and ensuring food security (Bockman et al., 1990) and that sustained yield growth is almost impossible without fertilizer supply (Larson and Frisvold, 1996). At the global scale, crop yields have increased by at least 30 to 50% as a result of fertilization (Stewart et al., 2005). In China, the fertilizer contribution rate (FCR) to cereal crop yield, from the national network on chemical fertilizer experiments, was 40.8% (Shi et al., 2008). FAO, (2009) has stated that after land and water, fertilizers are probably the most important input leading to increased yields. In the developed world after 150 years of increasing fertilizer use it is thought that roughly half of the present agricultural output may be attributed to fertilizers. Access to fertilizer use is constrained by market liberalization and trade policies that increase fertilizer prices relative to commodity prices, limited access to markets and infrastructure, limited development of output, input and credit markets, poverty and cash constraints that limit farmer's ability to purchase fertilizer and other inputs (Kheralla et al.2002).

The household's ability to purchase inputs, such as fertilizers and improved seeds, crops diversity and enhanced cultivation practices (Ellis et al 2009) are critical to increased agricultural production. Fertilizer use is used by most studies as a proxy for technology subsistence farming, by its nature, is production for direct consumption. Any farm input that augments agricultural productivity is expected to boost the overall production. This contributes towards attaining household food security (Brown, 2004). Studies by Rutsch (2003) and Smith and Huang (2000) on "Role of fertilizer in agricultural productivity" found that fertilization of farm land can boost agricultural production and influence the food security status of a household.

### **2.1.3 Innovation and food security**

According to Rogers & Scott (1997) innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The innovation is often born out of a problem arising and the realization that an innovation might provide a solution (Rogers, 1995). Sub-Saharan Africa is the only region in the world where livelihood and food security continue to deteriorate and where the number of people living in poverty has increased in the last decade one of the reasons for that is the low agricultural productivity ((Norton et al., 2010). These concerns led the African governments to pursue different kinds of agricultural policies and strategies, among others stimulating the adoption of new technologies, to boost agricultural production, and therefore reduce poverty and food insecurity (Jayna et al., 2003). However, these technologies such as intensive use of fertilizers, improved varieties of seeds, pesticides, irrigation have not been adopted by a significant number of farmers especially in Kenya yet their potential to increase agricultural productivity exists if we compare the actual farm yields with those of demonstration plots (Beddington, 2010).

The major direct effect is that technologies lead to increased production for personal household consumption and profits for farmers (de Janvry and Sadoulet 2002). De Janvry and Sadoulet further argue that new technologies lead to higher yields and to reduced production costs which translate into higher profits. The indirect impacts of new technologies are reduced food prices (resulting from higher agricultural productivity and output), employment creation for households in the exit and assistance paths, and general economic growth (through investment, supply and consumption linkages), particularly for households using off-farm sources of income as in the multi-activity and micro-enterprise paths (Berdegué & Escobar, 2002). Technology innovation and transfer in agriculture is a useful strategy, particularly in Kenya where revival of small-scale agriculture has been identified as a potential solution to the problem of involuntary unemployment (Klasen & Woolard, 2008). New technologies in agriculture stimulate linkages between farm and off-farm income sources (Reardon, et al., 2001), which consequently result in general economic growth. This is particularly important for those who utilize the multi-activity and micro-enterprise paths for a livelihood. Agricultural growth creates demand linkage for rural off-farm investments by advancing their demand capacities for production inputs and consumption commodities.

Supply linkage is created when growth in agriculture provokes off-farm investments' capacities in supplying inputs and services to the agricultural sector. Investment linkage,

however, is created when people in the multi-activity and micro-enterprise paths are enticed to diversify their income base by investing in agriculture given its sudden boom with high returns and increased profits in off-farm businesses, while those in farming business act vice versa for similar reason (Reardon, et al., 2001; Berdegué & Escobar, 2002). At the household level, Feleke et al. (2005) and Kidane et al. (2005) probed the household food security in rural households of Ethiopia. The studies link food security and technology adoption (adoption of high yield varieties of maize and fertilizer application). They concluded that technology adoption does increase household food security.

#### **2.1.4 Social cultural influence and food security**

It has generally been argued that female-headed households are more vulnerable to food insecurity and non-income aspects of poverty. For example, cultural restrictions on women's ability to participate fully in food production activities in some of the poorest areas of South Asia have left them particularly vulnerable in times of economic crisis (Kabeer,1990). Mc Lanahan (1985) finds that children in the female-headed households have a lower rate of socio-economic attainment than children in the male-headed households. If female-headed households utilize all available resources including engaging school going children to income generating activities to survive, then they end up with low education level attainment, thus the probability of transmitting poverty and food insecurity to the next generation is higher. There is an intrinsic gender issue where poverty is concerned. One of the ways in which this is manifested is in the shift from woman-lead leadership to man- lead leadership as one moves from subsistence farming to market driven farming. Women are important as food producers, managers of natural resources, income earners and caretakers of household food security. Agricultural productivity has been said to increase by as much as 20 percent when women are given the same inputs as men (IFPRI, 2002). Kennedy and Peter (1992) found that the proportion of income controlled by women has a positive influence on household caloric intake.

Education is an additional factor which is thought to influence the food security status of households. Educational attainment by the household head could lead to awareness of the possible advantages of modernizing agriculture by means of technological inputs; enable them to read instructions on fertilizer packs and diversification of household incomes which, in turn, would enhance households' food supply (Najafi, 2003).The education of women is known to produce powerful effects on nearly every dimension of development, from

lowering fertility rates to raising productivity, to improving environmental management. Women are fully effective in contributing to food and nutrition security, discrimination against them must be eliminated and the value of their role promoted. Many studies have revealed that the level of education helps the household head to use production information efficiently as a more educated person acquires more information he becomes a better producer (Hayami 1969, Lockheed et al. 1980, Phillips 1994, Wang et al. 1996, Yang 1997). The level of education is believed to influence the use of improved technology in agriculture and, hence, farm productivity. The level of education determines the level of opportunities available to improve livelihood strategies, enhance food security, and reduce the level of poverty. It affects the level of exposure to new ideas and managerial capacity in production and the perception of the household members on how to adopt and integrate innovations into the household's survival strategies.

The significance of household size in agriculture hinges on the fact that the availability of labor for farm production, the total area cultivated to different crop enterprises, the amount of farm produce retained for domestic consumption, and the marketable surplus are all determined by the size of the farm household. Household size has a negative and significant relationship with food security significant level, implying that the probability of food security decreases with increase in household size. An increase means more people to feed and indirectly reduces income per head, expenditure per head and per capita food consumption. Thus a negative correlation between household size and food security is expected (Paddy, 2003) as food requirements increase in relation to the number of persons in a household.

### **2.1.5 Government Policies on Food Security**

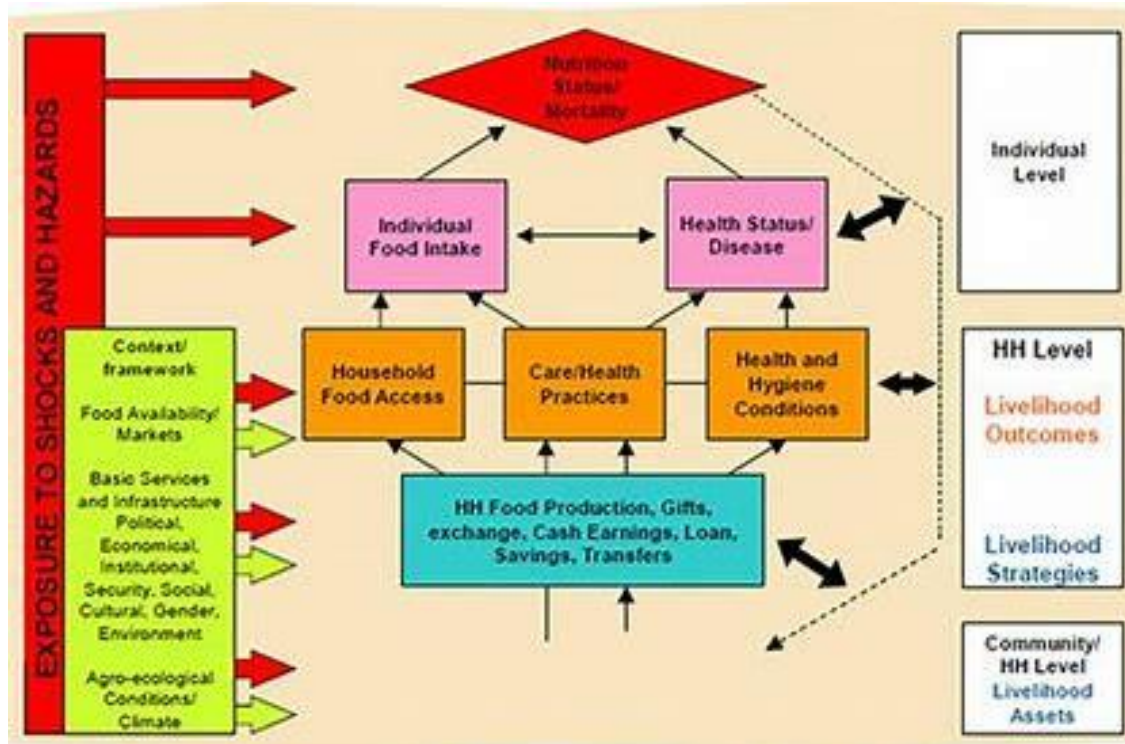
National Food and Nutrition Security Policy addresses food security issues and outlines the Kenya government's intervention measures that ensure that the country is food secure. This involved the review of the Sessional Paper No. 2 of 1994 on National Food Policy and setting up National Food Safety Agency incorporating the food traceability elements and international Sanitary or Phytosanitary standards. This also involved drafting of the Food Security and Safety Bill, which is now complete and has been forwarded to Agriculture Sector Coordinating Unit. The draft National Food Nutrition Security policy is ready (Raphael, 2009). Government policies around food production, distribution, and consumption influence the cost, availability, and safety of the food supply domestically and internationally. Policies have greatly affected the food security in Kenya. The problem arises

when the focus on policies, structures and institutions is put above that of the people themselves. When policies are not inclusive in their design they tend to handicap the exempted lot by providing barriers. One such way in which this takes place is uneven development within countries where certain regions are preferentially developed for political reasons at the expense of others. (Pinstруп,2002) Policies that promote monopolistic competition for the large-scale industries hurt the cottage and small industry. When we fail to provide safety nets for vulnerable groups such as the rural households, we doom them to destruction, hence food insecurity in the households. Policies play a central role in determining the food security of a nation because they help dictate supply and access of food as well as the citizens' ability to obtain food. Promising policies that seem to change the status of food security in Kenya and especially among the marginalized groups, the vicious cycle of famine and droughts are evident. Even irrigation farming, which was originally intended to alleviate destitution, has had remarkably little impact either in alleviating poverty or increasing food production, and has increasingly become dominated by the wealthy. (Diedrich, 1986).

#### **2.1.6 The conceptual framework**

The Food and Nutrition Security conceptual framework is used in the study. It is based on a particular understanding of food security and vulnerability. The Food and Nutrition Security Conceptual Framework informs not only the selection of indicators for analysis and use in geographic targeting, but also the design of field assessment instruments and the organization of standardized reporting formats. The Food and Nutrition Security Conceptual Framework adopted, considers food availability, food access, and food utilization as core elements of food security, and links them to household's asset endowments, livelihood strategies, and political, social, institutional, and economic environment (CARE, 2002).

The Food and Nutrition Security Conceptual Framework, focuses on identifying specific metrics for food insecurity and vulnerability and it adopts a risk analysis framework for understanding the distribution and causes of vulnerability and resiliency of countries, regions, communities, and households. It provides a succinct way of visualizing the relationships among factors that affect food and nutrition security, which is helpful during data collection and analysis. The analysis of food security begins with an examination of livelihood assets. The agro-ecological, political and institutional context of the area, and the resulting livelihood strategies adopted by the people that may lead to food security.



**FIG 2.1:** *Food and Nutrition Conceptual Framework (FANTA, 2013)*

Coping behavior involves activities such as the sale of land or other productive assets, the cutting of trees for sale as firewood, and, in an extreme example, the sale of girls into prostitution. These practices undermine not only the long-term productive potential of vulnerable households, but also important social institutions and relationships. The extent of reliance on these destructive practices is an indicator of food insecurity. While an understanding of how households cope is important to analysis, knowing how well households cope, or the resilience of household livelihoods, is more important.

### 2.1.7 Conclusion

The study is set out to analyse the factors contributing to food insecurity in Mutare district, Zimbabwe. In order to satisfy the objectives of the study, this chapter explores and discussed the existing literature with respect to the subject matters. In the subsequent chapter, methodological issues relating to this study shall be discussed in detail.

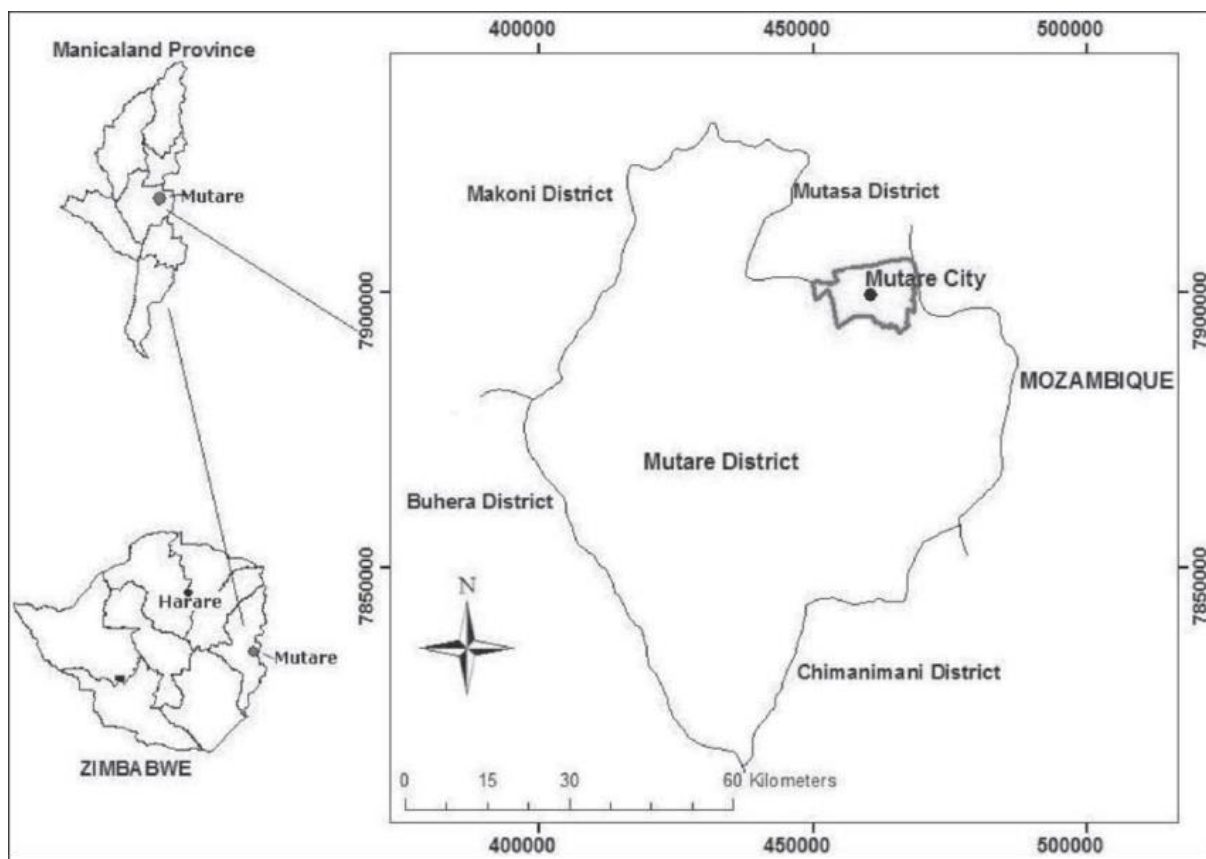
## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

This chapter describes the study site, research methodology and provides a general framework for the research. The chapter presents details of the research design, target population, sample size and sampling procedure, data collection tools, data collection procedures, data analysis techniques and ethical considerations while conducting the study.

#### 3.2 Brief description of study area/sites



**FIG 3.0:** *Mutare district map*

Mutare District is in Manicaland Province in the eastern region of Zimbabwe. Mutare is ruled by Chief Zimunya and Chief Marange. It borders Mozambique on the east, on the northeast it is bound by Mutasa District, on the northwest by Makoni District, on the southwest by Buhera District, and on the southeast by Chimanimani District. The greater part of the district lies in the basin of the Save River, which forms the southwestern boundary of the district.

Mutare is located at an elevation of 956 meters above sea level and stretches for 5,523 km<sup>2</sup> against population amounting to 547,460 (Zimstats, 2020).

Mutare District is classified into 3 agro-ecological regions, that is; Regions III, IV & V. Annual rainfall ranges from 450mm to 800mm. Agriculture in Mutare centers on crop production (maize, millet, sorghum, cowpeas, Bambara nuts and sunflower) and livestock production (dairy, beef, indigenous chickens and goats). Horticulture is practiced under irrigation and small seasonal gardens. Mutare is prone to hazards that impact on livelihoods and agriculture production. These include increasingly natural disasters like floods and cyclone on the upper part, while elnino induced drought, crop and livestock pests and diseases on the lower part.

The primary sources of income are, crop production, and livestock sales. Additional off-farm and none farm activities including, petty trading, casual labor, sale of firewood and different forms of self-employment. Food insecurity stands at 47.4%. Stunting in the district stands at 30.5% (INSPIRE, 2020).

### **3.3 Research Design**

According to Cresswell (2017), a methodology is a systematic way to solve a problem or a science of studying how research is to be carried out. For the purposes of this study, the researcher shall made use of quantitative methodology approach. The descriptive survey used a method of collecting information by interviewing and administering questionnaire to a sample of individuals (Orodho, 2003). The quantitative research design is appropriate due to its safeguard against bias and its ability to maximize reliability. The study aimed to use primary data collected through questionnaires, oral interviews to capture their opinion, preferences, feelings, judgments and attitudes to understand the factors that influence household food insecurity among rural households in Mutare district. Close ended questionnaires are a quantitative way of collecting data on a larger area. Data will also be presented quantitatively.

### **3.4 Target Population and sample size**

Sampling is the selection of units from an identified population (Ragab &Arisha, 2018). The idea of selecting a sample is to ensure that fair generalisations on the results obtained can be attributed to the population from which they are chosen. Sampling can be viewed as the selection of a subset of the population intended to provide some knowledge on a certain topic.

Sampling is the process of selecting research participants from a large pool of units. There are numerous farming households in Mutare district. In light of that, it is practically and technically infeasible for the researcher to collect information from each and every farming household. Therefore, the researcher had to limit participants by narrowing down the focus through sampling. Two sampling techniques were used for this study namely multiple stage sampling and simple systematic sampling. The sampling frame was calculated using the Feed the future sample size calculator



**FIG 3.1:** *Sample size calculation*

### **3.5 Sampling Procedure**

In the District, there are 36 rural wards from which the sample was drawn from. Population size from 2012 (Zimstats) was used because it disaggregates population by ward to get the proportion contributed, while the 2022 census produced the statistics at district level. Households from each ward were then systematically sampled with the first household randomly selected. The sample size attained was therefore 369 respondents.

### **3.6 Research Instruments**

The main data collection instrument that was used in this study was an adopted questionnaire interview. This was used for the purpose of collecting and collated quality primary quantitative data. Additionally, the questionnaires were used for the following reasons: its potentials in reaching out to a large number of respondents within a short time, able to give the respondents adequate time to respond to the items, offers a sense of security

(confidentiality) to the respondent and it is objective method since no bias resulting from the personal characteristics (Owens, 2002). 369 questionnaires were administered and all of them were responded to make 100% response rate.

### **3.7 Data analysis techniques**

Quantitative approaches were used for data analysis. Quantitative data from the questionnaire was coded for computation of descriptive statistics. Data was summarized and presented using percentages, means and standard deviation. Excel was used to run descriptive statistics to present the quantitative data in form of tables and graphs based on the major research questions. Excel was used because it is a powerful analysis package from which many other packages are derived from, in addition to that it is affordable as compared to SPSS. Results were compared to secondary data (existing literature), such as Zimvac reports for Manicaland, credible academic journals, government and NGO reports.

### **3.9 Research Ethical considerations.**

The researcher explained to the respondents about the research and that the study was for academic purposes only. It was made clear that the participation was voluntary and that the respondents were free to decline or withdraw any time during the research period. Respondents were not coerced into participating in the study. The participants had informed consent to make the choice to participate or not. They were guaranteed that their privacy was to be protected by strict standard of anonymity.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Introduction

The majority of the world's poor reside in rural areas of developing countries and rely on agriculture or related activities as a source of their livelihood (Suttie, 2019). In Zimbabwe, agriculture has a significant economic impact, especially on the rural economy. According to the World Bank (2020), Zimbabwe has been characterized by a sharp decline in agricultural output and high food prices, which have exacerbated food insecurity. Farmers are now encouraged to diversify to off-farm as a means of increasing the access pillar of food security. This section presents the results and discussion arising from the data analysis related to factors influencing food insecurity in Mutare district. The discussion is inclined towards; ecological, economic and socio-cultural factors, and innovations on food insecurity.

##### 4.1.1 Demographic and socio-economic characteristics of respondents

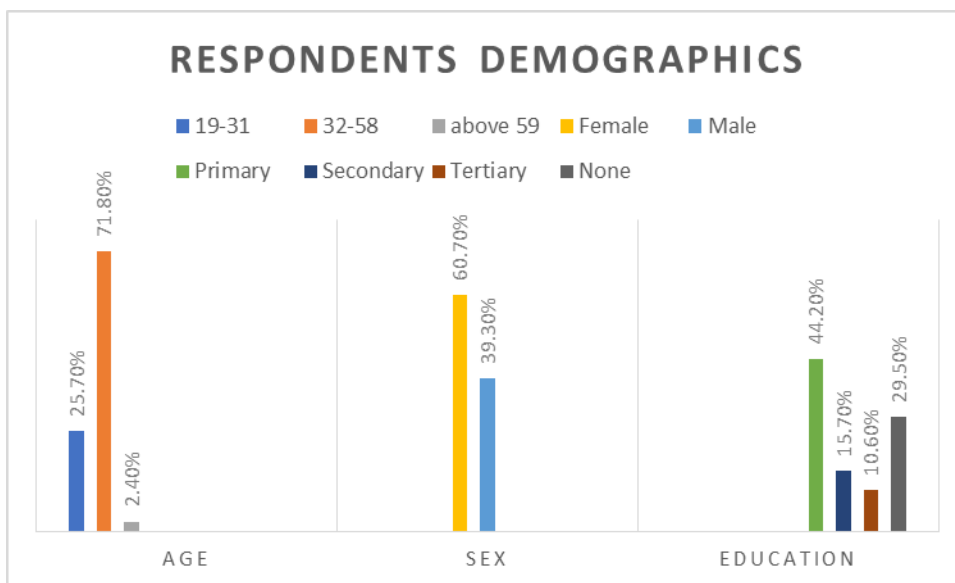


FIG 4.1: Respondent's demographics

##### 4.1.2 Respondent's Personal characteristics

The respondent's individual characteristics, such as age, sex, marital status, and educational attainment, are a proxy to the status of the study participants and how they relate to food

insecurity in the study area. The availability and accessibility of food at the household is affected by these demographic factors.

#### **4.1.3 Age distribution among participants**

According to the findings, 71.8% of respondents are between the ages of 32 and 58; 25.7% are between the ages of 19 and 31; and 2.4% are over the age of 59. This reveals that the population of the researched area is active and capable of producing their own food. The age range of 32 to 58 is considered to be economically engaged, experienced, wealthy, and decision-making, which makes them capable of producing their own food. According to Singh et al. (2003), the majority of the young and active population has moved to urban regions in quest of jobs, which is in conflict with the findings of this study. The presence of mining activities in Mutare and the polygamous pattern of marriages among the locals can be contributing to the availability of this age range.

#### **4.1.4 Sex of the respondents**

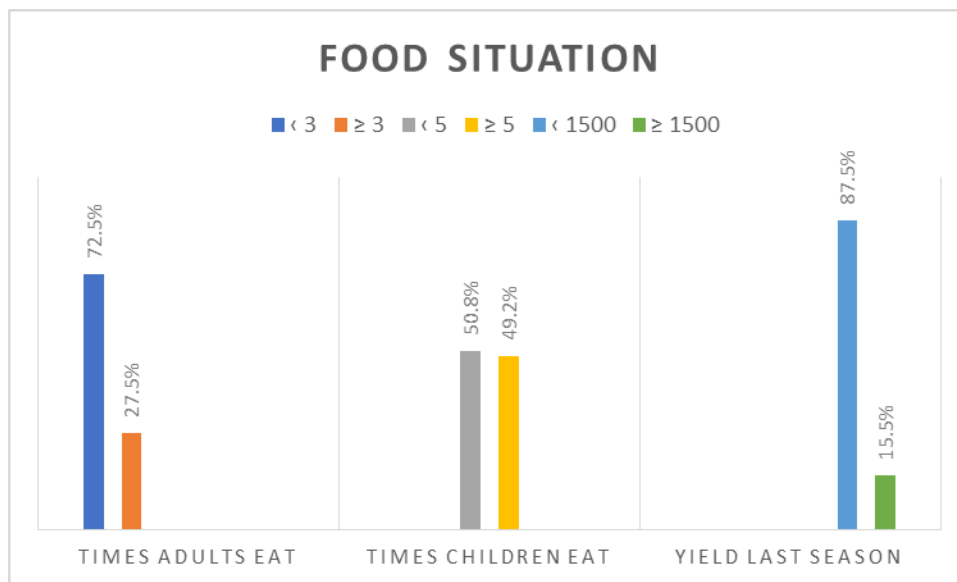
The study findings state that 60.7% are female respondents and 39.3% are male respondents. This indicates that women are more likely to engage in interviews since they spend the majority of their time doing heavy domestic tasks in addition to ensuring household food security. It was assumed that, the sex of the household head being male or female could influence food security within the household. Therefore, the study concurs with a 2007 study by Fabiyi et al. indicating rural women farmers are essential to food production and food security. They make up 70% of those employed in agriculture, 80% of food producers, and 100% of those who process staple foods. In addition to their traditional roles, women actively participate in farming and the processing of agricultural goods.

#### **4.1.5 Education level**

44.2% of respondents complete primary school education while 15.7% attended ordinary level. This suggests that the majority of the interviewed participants had low level of education. Education level is an important factor in adoption of improved agricultural practices and high yielding varieties (Singh et al, 2003). Cyphers et al. (1993) added that education is expected to be positively and significantly associated with adoption of sustainable technologies. According to International Food Policy Research Institute (IFPRI, 2004), education is vital in struggle to ensure food security. Mass education can make difference in agriculture output as it plays a great role in adoption of technologies; farmers

must be able to read and write the documents and use them to improve agricultural production. Those who can neither read nor write and those who are without basic numeracy cannot be relied upon to modernize agriculture to achieve the quantity and quality needed in maintaining food security at both household and national level.

## 4.2. Food situation in the study area



**FIG 4.2:** Food situation in the study setting

The majority of smallholder farmers in the study area harvested inadequate maize, while it is the primary staple food. The study also reveals that 84.5% of the respondents harvested less than 1500 kg of maize, which is insufficient for a family of seven people on average. Around 200 kg of grains will be consumed annually per capita (FAO, 2018). According to URT (1999), a population's inability to obtain 270kg of grains per adult per year is a sign of food insecurity. This shows that a significant portion of households did not produce enough food from their fields, leading to food insecurity because the average rural family size of seven cannot be met by the quantity produced by the majority of smallholder farmers. In addition, respondents were asked to list the number of meals their family members ate, which is another sign of food insecurity. According to the research, 72.5% of adults and 50.8% of children under the age of five reported eating fewer than three meals per day. The percentage of households where adults eat fewer than three meals per day and the percentage of children aged 6 to 59 months who eat less is one of the indicators of household food insecurity, according to UNDP (1998). It is against this background that the factors discussed below are deemed necessary for food insecurity in Mutare district.

## 4.3 Effects of Economic, Socio-cultural, climatic and ecological factors on food insecurity in Mutare district

### 4.3.1 Introduction

Economic activities are essential for diversification of the sources of farming household's livelihoods. It enables households to modernize their production by giving them an opportunity to apply the necessary inputs, and reduces the risk of food shortage during periods of unexpected crop failures through food purchases. It has generally been argued that female-headed households are more vulnerable to food insecurity and non-income aspects of poverty due to different socio-cultural norms. Climatic and geological factors also have a significant bearing on food security status of households and communities.

### 4.3.2 Methodology

A quantitative study was carried out through two sampling techniques namely multiple stage sampling and simple systematic sampling and an adopted questionnaire was used. More details concerning data collection procedure are given in Chapter 3.

### 4.3.3 Results and discussion

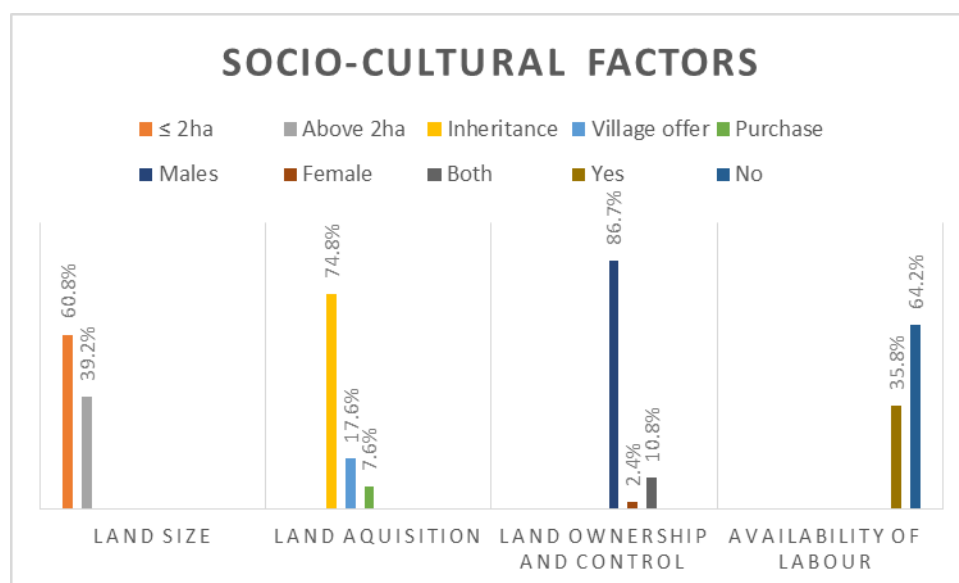


FIG 4.3: Socio-cultural factors

## Land size, acquisition, ownership and control

The most important factors and means of agricultural production are land and water. Since more than 80% of the rural population depends on land distribution (both quantity and quality) for their own crop production to feed their families and as a source of livelihood, it is a significant factor in preserving household food security. (Shisanya, 2011).

### **Land size**

Empirical research shows that, land is a valuable resource for people living in rural areas whose livelihoods depend on farming. Compared to farmers with small arable land, those with large farms are more likely to have secure access to food. Based on the findings, 39.2% of respondents have fields more than 2 hectares, while 60.8% of respondents have land that is less than or equal to 2 ha. The quantity and quality of land determines the quality and quantity of food crop production. This indicates that there is a limitation in regards to arable land in the study area. This study relates to the study by Maseya (2020).

### **Land acquisition**

According to the study, the majority of smallholder farmers (75.0%) obtained their land through inheritance, 17.5% through village offers, 4.2% through the clearing of natural forests, and 3.3% of the respondents purchased the land for cultivation. This shows that since many smallholder farmers receive their land through inheritance, they are vulnerable to a lack of arable land. This is because families are exponentially growing and are more dependent on available land, which restricts the expansion of agricultural activities. Clearing of natural forests to pave way for development, leads to environmental degradation, which increases the likelihood of drought and, ultimately food insecurity. The results of this study are contrasted with those of Babatunde's (2013) study in Dodoma, where a significant percentage of smallholder farmers acquired land through inheritance, which does not allow expansion of agricultural activities as family size is also expanding

### **Land ownership and control**

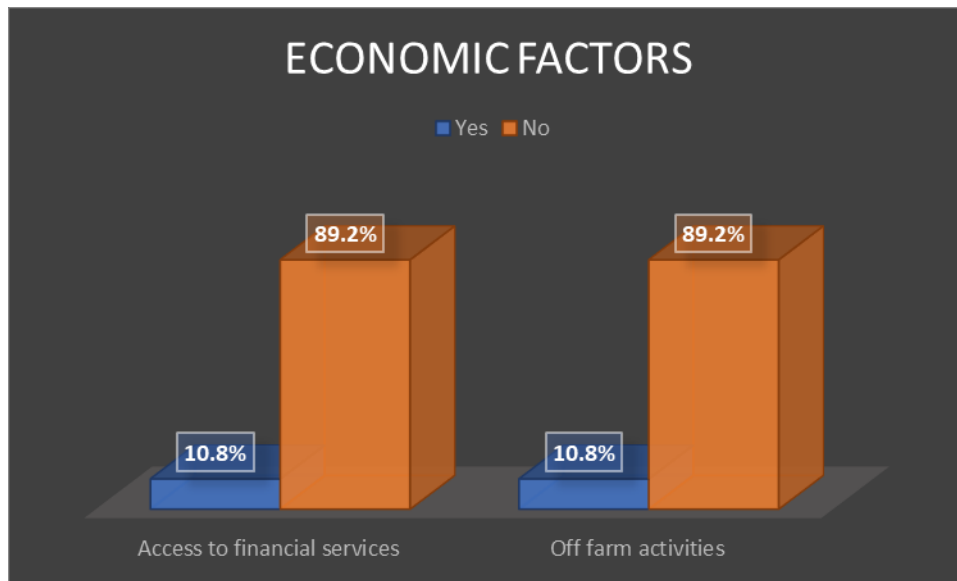
The results from the study shows that in most of the rural households 86.7%, land is owned and controlled by men; 9.2%, 2.5% and 1.7% of the land is controlled and owned by women, all family members and by both parents respectively. These findings suggest that even widowed or separated women can manage and own farmland. The findings of this study are consistent with Fonjong's (2010) findings that, despite women's greater participation in

farming activities, men are primarily in charge of most households and control the majority of the resources generated from agricultural activities. According to Ellis (2000), the majority of the agricultural labor force in Zimbabwe is made up of women, who make up over 80% of the workforce. Furthermore, Ng'ang'a (2011) added that although women do not own or control land, they typically play a crucial role in providing labor for farming activities, which improves household food security. Additionally, the Goedde (2019) insisted that women's roles must be clearly defined in order for them to be able to own and control the land, as it is done in Senegal, where the constitution gives rural women the same property rights as men. As a result of the distribution of land being left in the hands of traditional authorities, who are dominated by a patriarchal system that forbids women from owning any land, the research's findings discovered that women in Mutare district have no property rights to own and control productive resources.

### **Availability of labour force**

64.2% of respondents mentioned labour force as the problem that limits optimum food crop production. The results show that, 64.2% and 35.8% depend on family alone, and both family and hired labours respectively. Again, 87.5% have labour force between 2 and 3 individuals. In Zimbabwean rural setup, family dependents range between 4 and 7 members. The study also revealed that a large number of family dependents are young children who have little or no contribution to farming activities. This implies that, majority of rural inhabitation depend on family members as source of labour for farming activities. With large number of dependents, labour is therefore observed to be the limiting factor to farming output. The findings are similar to those of Dercon (1998) that, the household is the main unit of production. A productive effort centered on household member's labour is linked to the number of family size with the ability and enough time to work in their fields. Nevertheless, the results from the study contradict with those of Devereux (2003), that labour availability is crucial in improving agricultural production. For example, households with higher labour or proportion of household members in labour force seem to be less food insecure. This reason for disagreement is that, although most families are larger in size, only few contributes to farming owing to large proportionate of dependents who are young children and old people. Some household heads reported that, young people who didn't get opportunity to continue with secondary and tertiary studies spend time doing mining activities.

## Economic Factors



**FIG 4.4:** *Economic factors*

### Access to financial services

There is poor access to credit facilities within the sample. 89.2% of respondents on average claimed they had no access to credit for agricultural or business productivity. Those who have access, it was primarily from friends or family, though some also received credit from local lenders and non-governmental organizations (NGOs), totaling 10.8%. Fear of indebtedment and lack of knowledge are the causes of this poor access. This means that those who depend on farming as their major source of income have poor access to financial services fearing uncertainties facing agriculture, except those who engage in other income generating activities. The results of this study are consistent with those by Oluwatayo (2009), which found that less than 20% of respondents had access to credit facilities.

### Off-farm activities

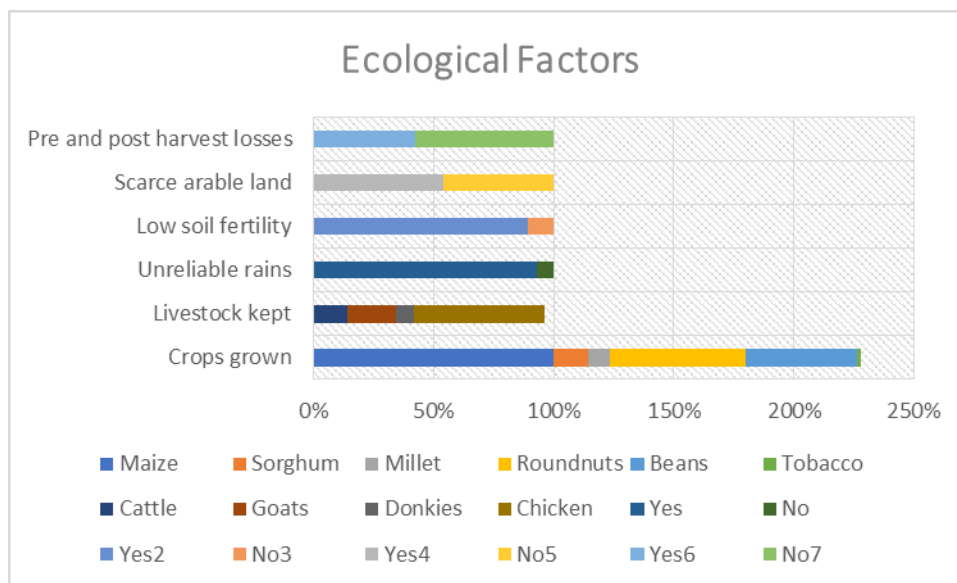
During the study respondents were asked whether they are participating in off-farm activities. The research aims at investigating off-farm activities which caters for food provision. Since production and productivity of the agricultural sector is low, rural household's income is not sufficient even to feed their families; they are expected to participate in off-farm activities mainly to supplement their agricultural income.

Only 10.8% of rural populace, according to the findings, engage in activities other than farming. Brick molding, carpentry, brick and block laying, buying and selling, illegal mining,

shoe repair, and iron smelting are among the activities being practiced. The results suggest that a significant portion of smallholder farmers rely primarily on farming as their main source of income. The results are similar to those of Haggblade (2006), who found that most hungry and poor people in developing countries still reside in rural areas and rely solely on agriculture for their subsistence.

Off-farm activities have a great potential to create jobs and extra income for rural households during the lean season, according to Fonjong (2010). Given the increasing population pressure on agricultural land, which results in a decline in land holding per capita, the findings show that 75% of rural farmers should engage in off-farm activities, providing a relatively easy escape route from poverty and hunger. According to FEWSNET (2018), households with access to food security have income from a variety of sources, including remittances, off-farm employment, and other income-generating activities.

### Ecological Factors



**FIG 4.5:** *Ecological factors*

### Types of crops grown

In the study area, crops like maize, sorghum, millet, beans, groundnuts, round nuts, and tobacco are grown. In order to meet individual dietary needs and reduce reliance on specific crop types that are more or less susceptible to environmental changes, crop diversification is crucial. This will ensure that the household has access to enough food. The findings show that 56.6% of respondents grow round nuts, 46.6% grow beans, and all farmers interviewed grow maize. The percentages of sorghum, millet, and tobacco grown are 14.1%, 9.2, and 1.6,

respectively. Farmers in the study area primarily grow maize, indicating that it is the main cereal crop. Even though they are more drought-resistant than maize, sorghum and millet are regarded as less preferred cereals. If food security is to be attained these communities should consider increase in production of small grains to boost the national food balance sheet for grains and cereals then exchange with the preferred grains from the national granary. Tobacco is the cash crop which is being grown in Bocha wards (semi-arid areas), where there is scarcity of rainfall.

### **Livestock kept**

Livestock ownership is important for improving production, coping mechanisms and for improved household nutrition status. Livestock act as a banking system in that they can be sold or exchanged when there are shocks to the household (FAO, 2017). The livestock kept in the study area include cattle, goats, donkeys, chicken and sheep. The results show that 54.2% of respondents keep chicken; 20.1% keep goats; 7.6% keep donkeys and 14.1% keep cattle. According to literature, farmers keep livestock for a variety of reasons, including providing food for the family and serving as a source of income, prestige, and wealth for brides. Additionally, farmers raise livestock (draught animals) to facilitate land cultivation and supply manure for enhancing soil fertility. This indicates that raising livestock, which provides manure, a source of income, and the use of draught animals for simplifying land cultivation, plays a significant role in enhancing household food security. This study is contrasted with that carried out by Mkandire (2003), who found a correlation between the number of draught animals present and the size of the cultivated land.

### **Unreliable rains during crops growing season**

93.2% of the respondents highlighted that unreliable rains are the major factor that hinders optimal food production as they base on rain-fed farming. The majority reported that, rainfall pattern changes from year to year. Based on participant's report, the rains are delaying onset and sometimes ending before maturity of crops and at other times prolonging after maturity causing destruction of produce by fungal disease. This implies that, effects on food security through unreliable rains is evident as there is increase in extreme weather variability such as droughts coupled with poor distribution of rainfall affecting production of food crops. The findings from this research agree with the study by FAO (2009) that, food crop production in Africa is highly variable and subjected to periodic droughts. Moreover Shisanya (2011) added that, Zimbabwe agriculture is rain-fed and this makes it vulnerable to weather changes

especially uneven distribution of rainfall. Furthermore, Ellis et al. (200) reported that in most regions of the low veld, an unreliable and erratic rain with unpredictable onset and abrupt stop is common. In such areas, rains fall within a short period and drought set in during the critical periods of crop-grain filling. FAO (2017) added that, the country is vulnerable to the impacts of climate change because of its dependency on agriculture and more specifically rain fed.

### **Low soil fertility**

Poor soils are cited by 89.2% of respondents as a challenge that prevents the best possible production of food crops, as shown in the graph above. Respondents were asked what they add to their fields for soil fertility. According to the results, 63.3% of respondents used farmyard manure, 5.8% used fertilizers in addition to farmyard manure, and 30.8% do nothing to improve their fields. According to respondents, adding farmyard manure in part is because there isn't enough for the entire fields, is the main cause of the poor soils. The fact that most people cannot afford chemical fertilizers and that it is expensive to transport is another factor. Even those who can afford it claimed that its application requires a lot of manpower and sufficient resources. The findings imply that a major challenge for rural small holder farmers is reduced soil fertility due to limited purchasing power.

Continuous cultivation, on the other hand, without efforts to increase soil fertility is linked to irreversible soil deterioration, which lowers per capita food production. This study concurs with research done by Maseya (2020), which found that soil depletion is the main issue preventing the best possible food crop production because a significant amount of nitrogen and phosphorous has been removed from the soil through crop growth, crop residue, and soil erosion, but has not been replaced. Crop residues are nonetheless removed and used to feed cattle, as well as for other purposes like making fences and firewood. Not out of ignorance, but rather because they require those resources. Devereux (1998) added that, there is inadequate use of organic manure due to lack of close integration between crop and livestock and lack of appropriate transport of farmyard manure and unavailability of adequate farmyard manure especially those who don't keep livestock. Poor soil management due to increased price of fertilizers is among the factors contributing to low crop's yields (Haggblade, 2006).

### **Scarcity of arable land**

The results indicate that 54.2% of the respondents noticed shortage of cultivatable land as a hurdle to maximum food crop production, being attributed to lack of area for expansion. This is owing to land ownership by inheritance. Inherited land leads to reduction of field sizes as family size grows. Since land is the most important resource in agricultural backed rural communities, it is a critical factor in crop production. It is evident that its scarcity will limit optimal food production. Low productivity of land lead to food insecurity due to the unproportionate number of household members to the yield hence demand of food for the family members (Ellis, 2000).

### **Pre and post-harvest food losses**

42.5% of sampled participants reported food loss due to pests and diseases. Birds, insects, rodents, and weevils were named as causes of food losses. The study's findings imply that while pests and diseases attack crops, few of them used chemicals to scientifically control them, and some of them combined chemicals with ashes. The cost and concern over potential chemical side effects are the main causes. This study therefore concurs with other studies like Fonjong's (2010) finding that post-harvest losses are estimated at 20–30%. Food crops are vulnerable to insect and fungus attack after harvest, with weevils being a particular threat. Stacking and storage techniques are frequently to blame. Pre-harvest losses make up more than 30% of all crop losses, according to FEWSNET (2018). The majority of farmers were seen storing cereals using traditional methods.

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## **4.4 Effects of Modern farming and Innovation technics on HH food insecurity in Mutare district**

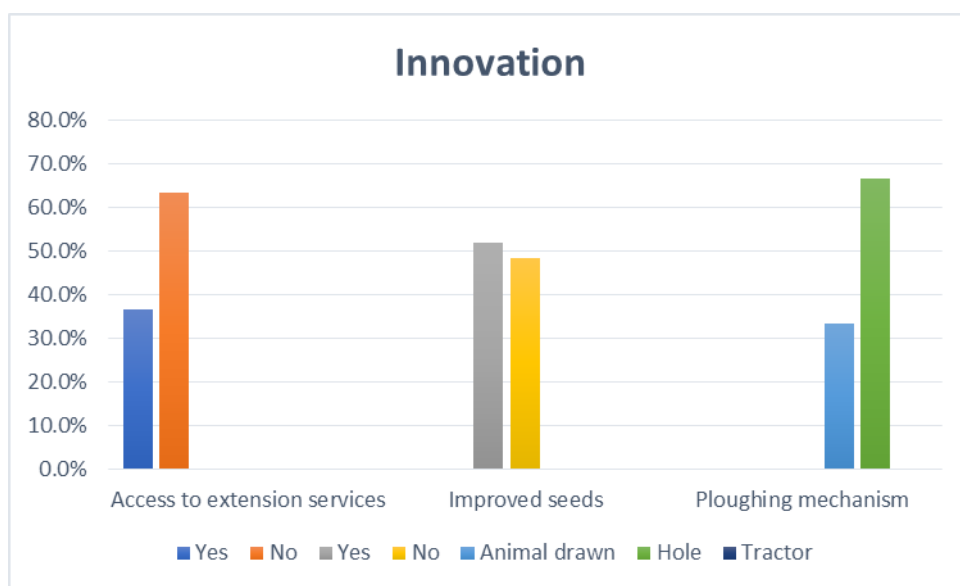
### **4.4.1 Introduction**

Innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The innovation is often born out of a problem arising and the realization that an innovation might provide a solution. This had led to the government to pursue different kinds of agricultural policies and strategies, among others stimulating the adoption of new technologies, to boost agricultural production, and therefore reduce poverty and food insecurity.

#### 4.4.2 Methodology

A quantitative study was carried out through two sampling techniques namely multiple stage sampling and simple systematic sampling and an adopted questionnaire was used. More details concerning data collection procedure are given in Chapter 3.

#### 4.4.3 Results and discussion



**FIG 4.6:** *Innovation*

#### Limited use of modern technology

The technologies that improves farming outputs are mechanization, use of improved crop varieties, and the development of agrochemicals improve soil fertility, and control of weeds and pests (Moore, 2007). 51.8% used improved seeds however below recommended amount per hectare, 5.8% use chemical fertilizers. 33.3% use plough, and 0% use tractor for land cultivation. This indicates that because modern cultivation facilities are out of reach for smallholder farmers, the majority of them still rely on hand hoe farming. Although 51.7% of

farmers used the improved maize seeds from the command agriculture program, the majority of them used less of the recommended amount per unit area, which led to a small yield of maize. Farmers suggested that despite subsidies on inputs like treated seeds and chemical fertilizers, there was a shortage of inputs for all smallholders and a delay in the delivery of these priceless commodities. Perceptions about fertilizer application, soil degradation, and crop failure due to inadequate rainfall also serve as a barrier for those who have the purchasing power to buy fertilizers. These findings concur with a study by Tomich et al. (2019) that found that while many technologies have been released or suggested for use by farmers, very few of them have actually been used. Technologies are expensive due to rural household's limited purchasing power as a result of their low income. Other factors include a lack of information dissemination, sticking with the norm, and ineffective extension services. The findings of the study are further supported by Rukuni (2002), who notes that less chemical fertilizer is used overall than organic fertilizer. Approximately 23% of seeds were purchased, he added, while the majority (68%) were saved from previous harvests. Utilizing seed reserves could lead to a diminished or drastically diminished subsequent harvest and a revolving door of production issues. In Marange, cereal crop seeds saved from the previous harvest are used extensively by the communities.

#### **Availability of extension services**

It has been noticed that there is inadequate extension service provision. Extension agents are visiting 33.3% of the respondent's fields hence they receive the information during village assemblies. This means that, farmers have poor and inadequate access to extension services, thus poor performance in agricultural production. The research findings are tally with that conducted by Maseya (2020) who found that, weak agricultural extension services contribute to low agricultural food crop production.

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## **CHAPTER: 5**

### **CONCLUSION, AND RECOMMENDATION**

#### **5.1 INTRODUCTION**

This chapter presents the key conclusion, and recommendations of the research. This section also includes some policy implication that were obtained from the results and areas for further research. The research aimed at analyzing the factors contributing to food insecurity in Mutare district.

#### **5.2 CONCLUSIONS**

Most of households in Mutare district are food insecure. This has seen to be attributed to lack of use of improved technologies to boost productivity as well as relying on unpredictable rains. This is further worsened by the poorly fertile fields and the conventional mindset of producing maize which is the staple, regardless of the climatic and ecological feasibility. Rural households are still banking on agriculture for their livelihoods despite its uncertainties. Households with members engaging in off-farm activities have proven to be more stable with regards to food access than those who are not. There is therefore need to engage the local communities with regard to climate smart agriculture, local food systems, and indulgence in off-farm activities.

#### **5.3 RECOMMENDATIONS**

Based on the findings of the study; the following recommendations were made:

- Household members should be encouraged to specialize in production of climatic and ecologically feasible crops and livestock to establish a food system and to base on trade for preferred food commodities.
- Promotion of women ownership and control of agricultural land is essential in realizing wholesome gains in agricultural productivity.

- Creation of accessible credit schemes can facilitate the establishment of off-farm businesses and boost agricultural productivity through timely access to quality inputs.
- Off-farm activities should be encouraged and diversified and rural households properly informed on its advantages to livelihood. This increases their access to safe, nutritious and preferred food at all times through the purchasing power.
- Some of the constraints highlighted by the households like access to extension services, and drought power should be looked into by all stakeholders in order to raise productivity.

## **5.4 POLICY IMPLICATION AND RECOMMENDATION**

Food systems have not been taken seriously as a way to attain household food security. Government policies of achieving food security have focused much on farming activities e.g. promotion of crop production through approaches like *Pfumvudza* (climate-proofing agricultural concept), which emphasizes on the use of conservation farming techniques to make the most out of small pieces of land (Maseya, 2020). Less has been done in any other aspects. Therefore, there is need to introduce and collaborate farming and off-farming as a holistic approach to household food security. To do so the government need to practice context specific inputs distribution, off-farm and entrepreneur skills. Equal effort is priceless in intensifying extension services, and market linkages of context specific products so as to improve food availability and access, in order to curb and reduce food insecurity.

## **5.5 AREA FOR FURTHER RESEARCH**

In order to improve the significance of findings, conclusion, and recommendations, further research should be done nationwide on the Factors contributing to food insecurity in Zimbabwe. This will help gather information from many parts of the country in different ecological regions. A gray area in possible off-farm enterprises and use of under-ground water to boost access and productivity respectively is available for research to provide possible recommendation to the persisting challenge of food insecurity in Zimbabwe.

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## Appendix 1: Study questionnaire

### Introductions

Hello. My name is .....and I am collecting this data for academic purposes. I am collecting information that will help to understand the factors contributing to food insecurity in this area. I would appreciate hearing your experiences and perspectives. I am kindly asking for your participation in this discussion. The discussion will take up 30 to 45 mins.

I follow strict procedures to protect the privacy of everyone I speak with in this study. It is your choice to participate in this study or not. No services will be withheld if you decide not to, and if you chose to be interviewed, you will not receive any gifts, special services, or remuneration. Your name or identifying information will not be recorded in any of our records. Everything we discuss will be held in strict confidence and will not be shared with anyone else. There are no right or wrong answers to the questions. I am interested in your opinions and experiences.

I will be taking some notes.

Do you have any questions?

Do you agree to proceed?

Date.....

Village.....

Ward

.....

Use a Tick (√) for the questions with choices in the appropriate box.

### SECTION A. Demographics

1. What is your sex?

a) Male [ ] b) Female [ ]

2. What is your age in years [ ]

3. What is your highest level of education?

a) None [ ] b) Primary [ ] c) Secondary [ ] d) Tertiary [ ]

### **SECTION B. Food situation**

1. What was your grain and cereal harvest last season?

a) 1500 kg [ ] b) Above 1500 kg [ ]

2. How many times do adults eat in a normal day?

a) less than 3 times [ ] b) 3 or more times [ ]

3. How many times do children eat in a normal day?

a) less than 5 [ ] b) 5 or more [ ]

### **SECTION B. Economic factors and food security**

1. Do you have access to financial services or loans for farming activities?

a) Yes [ ] b) No [ ]

2. Do you engage in any off-farm income generating activities?

a) Yes [ ] b) No [ ]

### **SECTION C: Modern farming and innovation technics**

1. What do you use in ploughing your farm?

a) Animal [ ] b) Tractor [ ] c) Human Labour [ ] d) Others [ ]

2. Do you use improved seeds?

a) Yes [ ] b) No [ ]

3. Do you use fertilizer/manure?

a) Yes [ ] b) No [ ]

4. Do you have access to extension service providers?

a) Yes [ ] b) No [ ]

### **Section D: Ecological factors**

1. What crops do you produce?

a) Maize [ ] b) Sorghum [ ] c) Millet [ ] d) Round-nuts [ ] e) Beans [ ] d) Tobacco [ ]

2. Which livestock do you have?

a) Cattle [ ] b) Goats [ ] c) Donkies [ ] d) Chickens [ ]

3. Do pests attack your crops while in the field?

a) Yes [ ] b) No [ ]

4. Does land scarcity limit crop production?

a) Yes [ ] b) No [ ]

5. Does low soil fertility limit crop production?

a) Yes [ ] b) No [ ]

6) Do pests attack your crops while in the field?

a) Yes [ ] b) No [ ]

**PART E: Social-cultural factors and food security**

1. How was your land acquired?

a) Inheritance [ ] b) Village offers [ ] c) Purchase [ ]

2. What is the size of the farm land?

a) Less than 2ha [ ] b) greater or equal to 2ha [ ]

3. Who owns and controls the land

a) Adult male [ ] b) Adult female [ ] c) Both [ ]

**Do you have questions that you would like to ask?**

**Thank you for your time.**