

# **UNDERSTANDING THE FOOD INSECURITY OF VULNERABLE HOUSEHOLDS RESIDING IN KALANGA, SWAZILAND**

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Submitted in fulfilment of the requirements in respect of the  
master's degree

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This study is dedicated to my late beloved father,  
who died in 2019 after a heart seizure.

Being his only daughter, it would have been a  
privilege celebrating this achievement with him.

May his soul rest in peace.

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# DECLARATION

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I, Vuyisile Colleen Mondlane, declare that this dissertation that I herewith submit for the master's degree *Master of Science majoring in Consumer Science* at the University of the Free State, is my independent work, and that I have not previously submitted it for a qualification at another institution of higher education.

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Date

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Lastly, I acknowledge God for his grace in my life.

*If money is your hope for independence, you will never have it. The only real security that a person can have in this world is a reserve of knowledge, experience, and ability.*

Henry Ford

# ABSTRACT

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Food security is a worldwide concern, especially in developing countries. A substantial number of researchers have investigated the causes, consequences, and possible solutions to this challenge. Well eluded in most studies is the vulnerability of developing countries in sub-Saharan Africa. As part of the Southern Africa region, Swaziland is not exempt from the challenges facing most countries in sub-Saharan Africa. Roughly 80% of the Swazi population is rural based, and their livelihoods depend on subsistence farming and livestock rearing. Climate change has affected crop production, in addition to the severe droughts of the past three decades. As a result, the people experienced severe food shortages. The biggest concern in these countries is to ensure that all people are food secure to prevent negative consequences for the health and well-being of the citizens. Food security is essential at all levels, particularly to ensure good nutrition at household level. Although there are food security policies in place in Swaziland, many households are still food insecure. Food aid is a short-term remedy, which does not improve long-term food security, especially in rural areas. Therefore permanent, self-sustaining strategies should be researched to ensure accessibility to food by all households at all times in Swaziland. One possible way to ensure sustainability could be to focus on the sufficient production of food by households. The scarcity of food has resulted in the deterioration of the nutritional status of vulnerable households, affecting their productivity. Hence, the overall aim of this research was to determine the eating patterns of vulnerable households in KaLanga in the rural Lubombo region of Swaziland. In addition, the researcher aimed to identify factors contributing to malnutrition and understand coping strategies used by the households when there was a shortage of food. This research was quantitative, explorative, and descriptive in nature with a cross-sectional approach. The researcher used a purposive method of sampling to sample households with specific characteristics of vulnerability to obtain

the required information. A total number of 292 respondents were given questionnaires to complete, signing a consent form before participating in the survey. Two hundred usable questionnaires were used for descriptive and frequency statistics.

The results showed that the majority of the respondents consumed three meals a day. However, the food consumed was not stated, so it was challenging to determine whether the food was nutritious enough to sustain a healthy life. If meals were to be skipped, it was most likely lunch, and the main reason would be to save food, or there was no food to eat. Snacking in between meals was not popular with the majority of the respondents, although traditional snacking patterns was popular in Swaziland, especially in summer.

The factors contributing to the vulnerability and food insecurity of households included the limited growing of crops and keeping of livestock as sources of income to the vulnerable households. Shortage of rainfall has forced households in the Lubombo region not to grow crops, which intensified the lack of food in vulnerable households. This has resulted in them incorporating coping strategies to improve food security. In addition, adequate supply of water can improve the state of food insecurity in the region.

The results of the study confirmed that household food security in rural households was compromised because most households employed various coping strategies when food was insufficient. However, many of the respondents were not relying on general coping strategies; instead, they were relying heavily on food aid from different organisations. Food aid is a short-term remedy, as most respondents indicated that it did not last for the whole month. Moreover, food aid is not always consistently available. The food aid parcels consist of cooking oil, beans, maize meal, and some include rice and mealie rice.

Food production should be improved in the drought stricken community of Kalanga in order to increase food production that will improve the community member's

health. Food production can reduce food aid donated to the households because it does not sustain them. In addition, it can enable the most vulnerable to produce their own food. Construction of dams will enable the households to produce their own food through irrigation of crops. Moreover, supply of farming inputs to vulnerable households, fencing of fields and adhering to food security policies can solve the problem of food insecurity.

Keywords: Food security; vulnerable households; food aid; coping strategies

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# ABBREVIATIONS AND ACRONYMS

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<b>E VAC</b>	Eswatini Vulnerability Assessment Committee
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FANRPAN</b>	Food, Agriculture and Natural Resources Policy Analysis Network
<b>GDP</b>	Gross domestic product
<b>HIV AIDS</b>	Human Immune Deficiency Virus and Acquired Immunodeficiency Syndrome
<b>IMF</b>	International Monetary Fund
<b>IFAD</b>	International Fund for Agricultural Development
<b>NGO</b>	Non-governmental organisation
<b>NFSPS</b>	National Food Security Policy of Swaziland
<b>SEPARC</b>	Swaziland Economic Policy Analysis and Research Centre
<b>SSA</b>	Sub-Saharan Africa
<b>Swazi VAC</b>	Swaziland Vulnerability Assessment Committee
<b>SZL</b>	Swaziland Lilangeni
<b>TB</b>	Tuberculosis
<b>UN</b>	United Nations
<b>UNICEF</b>	United Nations International Children’s Emergency Fund
<b>US</b>	United States
<b>USAID</b>	United States Agency for International Development
<b>US\$</b>	US Dollar
<b>WHO</b>	World Health Organization
<b>WFP</b>	World Food Programme
<b>ZAR</b>	South African Rand

## DEFINITION OF TERMS

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**Attitudes:** Attitudes are described as feelings around an object such as food, for example every individual has distinctive likes and dislikes concerning foods (Foskett & Ceserani, 2007).

**Beliefs:** Beliefs are defined as a feeling of self-assurance arising from one's appreciation of food quality (Tull, 2012).

**Climate change:** Climate change is a change in weather patterns for an extended period of time (Mavuso et al., 2015).

**Conflicts:** It is a disagreement between people with opposing views (Dubois, 2013).

**Culture:** Culture is described as a complex whole that encompasses knowledge, beliefs, art, morals, law, customs, and habits acquired by a person as a society member (Foskett & Ceserani, 2007).

**Food security:** Food security is achieved when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Cooper et al., 2020).

**Food security trends:** Trends that are described as food changes in direction with food consumed to make food habits (De Graaf et al., 2012).

**Food habits:** Food habits are means which individuals or groups select, consume, and use portions of the available food supply in response to social and cultural pressures (Tull, 2012).

**Food insecurity:** It is when people lack secure access to sufficient amounts of nutritious food for normal growth and development and the ability to live an active and healthy life (Swaziland Economic Policy Analysis and Research Centre [SEPARC], 2017).

**Gini coefficient:** It refers to the ratio between the income shares held by the richest and the poorest (Weiser et al., 2007).

**Global hunger index:** It is a multidimensional statistical tool used to describe the state of a country's hunger situation (Food and Agriculture Organization, 2017).

**Knowledge:** Knowledge is described as information or theoretical understanding that is gained through education or experience concerning something (Brown, 2004).

**Lean season:** It is a period of time where food is scarce (United States Agency for International Development, 2018).

**Legumes:** Legumes are dried seeds of the leguminous family, such as kidney beans, soya beans, and lentils (Tull, 2012).

**Malnutrition:** A condition that results from a shortage or excess nutrient intake (Foskett & Ceserani, 2007).

**Poverty:** It is defined as the inability to attain a minimum standard of living (Arimah, 2004).

**Snack:** Snacks are defined as small meals eaten in between main meals (Tull, 2012).

**Stress:** Unanticipated changes and disturbance to livelihoods (Nkondze et al., 2013).

**Traditional foods:** Foods which are grown locally or regionally, which are consumed by individuals for some time (Manana, 2014).

**Taboos:** Taboos are described as a social or religious custom prohibiting the eating of particular food (Tull, 2012).

**Unemployment:** It is a condition in which those who have the will and ability to work for a certain wage rate cannot find jobs (Brixiova et al., 2012).

**Undernourished:** Deficiency of nutrients and minerals which result in malnutrition (Molewa, 2009; Tull, 2012).



**Values:** Values are defined as enduring beliefs centrally located within one's total belief system (Klimis-Zacas, 2001).

**Vulnerability:** The degree to which an exposed unit is susceptible to be harmed by stress in conjunction with its ability to cope, recover, and adapt (Abate, 2009; Shewmake, 2008).

## Chapter 1

# INTRODUCTION

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### 1.1 General introduction

There is a worldwide concern about food security and its counterpart, food insecurity, especially in developing countries as many researchers investigated this issue (Balehegn et al., 2020; Cooper et al., 2020; Fitawek et al., 2020; Oseni & Masarirambi, 2011; Zaehringer et al., 2018). Achieving food security in its totality continues to be a challenge, not only for developing countries but also for the developed world (Mwaniki, 2011). A reliance on rain-fed crops, as well as low yields due to environmental conditions, generally leads to food shortages that result in malnutrition. These food shortages is one of the primary causes of a significant proportion of the population that requires food assistance (Fitawek et al., 2020). Consequently, food security is one of the main determinants of malnutrition in developing countries (Fitawek et al., 2020).

As far back as 2011, Oseni and Masarirambi stated that overall global warming could be expected to add in one way or another to the difficulties of food scarcity and production, thus food insecurity. As a consequence, the authors predicted that the shortage of food in the sub-Saharan African (SSA) region would possibly increase. Sadiddin et al. (2019) confirmed this increased food shortage, as well as the subsequent deterioration in food security.

One of the developing countries experiencing these challenges is Swaziland. Swaziland is a landlocked country in Southern Africa which was renamed as Eswatini in 2018. Almost 70% of the Swazi people are based in rural areas, and their livelihoods are dependent on subsistence crop farming as well as livestock rearing (United States Agency for International Development [USAID], 2018). The reliance on subsistence

farming has affected their source of income and food. Crush et al. (2011) stated that Swaziland has experienced severe droughts in the previous three decades, which has resulted in food shortages, mostly affecting rural areas. Irregular rainfall and prolonged dry spells during the 2017–2018 rainfall season, as well as an outbreak of fall armyworm has impeded food production. This left approximately 177 000 rural people in urgent need of food assistance (USAID, 2018).

The main concern is to ensure that all people are food secure to prevent negative consequences on health, such as malnutrition (Dubois, 2003). Focusing on vulnerability will assist in identifying threats and risks that people may encounter in vulnerable households (Cooper et al., 2020). It could also assist in identifying interventions that may aid vulnerable households to adopt self-sustainable strategies. Moreover, Fitawek et al. (2020) stated that food security is vital at all levels, particularly those of households. Although it is generally accepted that food security at household level implies good nutrition, it does not necessarily ensure a good nutritional status (Fitawek et al., 2020).

As far back as 2006, Love et al. estimated that at least 28% of the population of SSA would be undernourished and living in arid land areas by 2020. A possible indicator that the production of food will decline would be due to reasons such as shortage of water, drought, climate change, and diseases. Moreover, it will be due to a rise in food prices and economic crisis which will result in millions of people suffering from malnutrition and deficiency diseases (Committee on World Food Security, 2012). According to a combined paper by the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Children’s Fund (UNICEF), the World Food Programme (WFP) and the World Health Organization (WHO) (2017), these figures are possibly accurate because during 2016, 27.4% of the people residing in SSA were malnourished.

Despite the efforts of many SSA countries, including Swaziland, to improve food security, the problem has not been solved. Assessments of food security have shown that between June and September 2019, it was estimated that around 205 000 (22% of the rural population) were experiencing severe acute food insecurity and required urgent humanitarian action across the four regions in Swaziland, namely Hhohho, Manzini, Shiselweni and Lubombo (the study area). This includes around 157 000 people being in a crisis (Phase 3) and approximately 47 000 people being in an emergency situation (Phase 4). Roughly 370 000 people were also in a stressed situation (Phase 2) and required livelihood support (Integrated Food Security Phase Classification, 2019–2020). Moreover, the WFP (2020) reported that 44.7 million people in the SSA are food insecure due to accumulating effects of climate change, poverty, chronic malnutrition, and economic shocks. However, it should be noted that most food security studies focused on the central and northern parts of Swaziland, where drought is not an influential factor when compared to the Lubombo region where the study was done (FAO, 2006; Swaziland Vulnerability Assessment Committee [Swazi VAC], 2016, 2017).

In Swaziland, there is currently a relief and recovery operation focusing on strengthening livelihoods, while meeting the relief needs of a growing number of food insecure people (WFP, 2020). Although this provides relief for the short-term, it does not address the overall challenge of what?. In addition, due to the scarcity of food, especially in rural areas, several regular behavioural responses (coping strategies) are being used to manage household food shortages. These coping strategies include selling of assets and reducing the number of meals per day which can affect the nutritional status of households (WFP, 2020). Subsequently, the purpose of this study is to understand food security in vulnerable households and find self-sustaining strategies that will help to improve food security for these vulnerable households in Swaziland.

Although there are food security policies in place, there are still many households which are food insecure in both rural and urban areas in Swaziland. Some of these policies include the improvement of the impact of gender on food availability, improvement of agricultural production and food security, improving access of households and individuals on Swazi Nation Land to land and water resources and to promote the role of livestock in securing access to food (WFP, 2020). Moreover, the national food security policy for Swaziland (WHO and Global Nutrition Policy 2016-2017) were implemented with limited success. The food aid is generally donated by non-governmental organisations (NGOs) such as World Vision Cash Transfers for Food (to 48 000 food insecure people), as well as government, to vulnerable households to reduce hunger (Mhlanga-Ndlovu & Nhamo, 2017). It is a short-term relief which does not help to improve food security to the vulnerable households' hunger. Therefore, permanent, self-sustaining strategies should be explored to ensure the accessibility of food by all households at all times in the rural areas of Swaziland.

## **1.2 Problem statement**

Swaziland faces a humanitarian crisis as a direct result of the effects of poverty, natural disasters and the Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome (HIV/AIDS) (WFP, 2008). Although the country is considered a lower middle-income country, 69% of the population lives on or below the poverty line (Eswatini Vulnerability Assessment Committee [E VAC], 2020). Although the WFP provides relief food assistance for short periods, there is a need for a self-sustaining solution to assist the people. One way to ensure the sustainability and longevity of such a solution is to focus on food production.

The food insecurity experienced by the households in rural Swaziland as a result of climate change affecting crop production, had resulted in poverty, diseases, economic meltdown, and high prices (Mhlanga-Ndlovu & Nhamo, 2017). Most households are dependent on food aid provided by the government and NGOs, which is rarely

available (WFP, 2020). This led to the deterioration of the nutritional status of affected households. Therefore, in addition to self-production, strategies for rural development should be put in place which could provide self-sustaining strategies to improve food security in households in the country.

The observation in rural communities is that they are essentially waiting for food aid from donors and government (WFP, 2020). If food aid does not arrive, most of these households go without food. The observation by the Integrated Food Security Phase Classification (2020) was that the situation has deteriorated within the four regions of Swaziland due to drought, which caused farmers not to grow crops, reducing casual labour and food production. Hence, the context of a long-term food aid approach does not address the four-pillar approach of food security which includes food access, food availability, food utilisation and stability (E VAC, 2020). The assumption in this regard is that food security will be improved should there be adequate provision of food resources or resources for self-production. However, the challenge is complex, taking the culture of poverty, coping strategies and the consequences of chronic malnutrition into consideration. Such communities have often been isolated and marginalised and therefore feel demotivated, nutritionally affected, and have lost their status due to poverty and diseases.

Addressing the problem of food security can help improve their nutritional status. However, before the totality of the challenge can be grasped, the level of vulnerability, coping strategies and resources needed, which include the key drivers and limiting factors of the affected households, should be thoroughly investigated and understood.

### **1.3 Research problem**

In recent years there has been an increase of food shortages, especially in the Lubombo region of Swaziland, which has led to vulnerable households opting for coping strategies which were short-term remedies and did not improve their long-term food security. Food production deficits can cause a rise in food prices, with severe

ramifications on the poorest and most vulnerable (Swaziland Economic Policy Analysis and Research Centre [SEPARC], 2017). Moreover, it can lead to substantial increases in imports to meet local food needs, which can result in increased fiscal pressure on national budgets (Food, Agriculture and Natural Response Policy Analysis Network [FANRPAN], 2011).

Literature has indicated that there is a significant challenge of vulnerability in the Lubombo region of Swaziland. This is the region that is mostly affected by dry spells (SEPARC, 2017; Masuku & Sithole, 2009; Mavuso et al., 2015; Nkondze et al., 2013; Shongwe et al., 2014). This region is also the region that suffers the most from low and medium dietary diversity (Swazi VAC, 2017).

Due to an increased number of vulnerable households in Swaziland, it implies that many of these households are unable to meet the requirement to be considered food secure. As a consequence, malnutrition is rising, which adversely affects the households' ability to obtain a food secure status. Thus, the proposed research on understanding food security among vulnerable households could highlight the necessary measures to be taken. These include the key drivers and limiting factors to propose long-term self-sustaining strategies that will improve the food security of these vulnerable households.

#### **1.4 Main aim and objectives**

The overall aim of the research was to understand the eating patterns of vulnerable households in KaLanga in the Lubombo region of Swaziland.

The following objectives for the study were proposed:

1. To describe the food consumption patterns of KaLanga residents at that certain time.
2. To identify the factors contributing to food shortages in the KaLanga community in the Lubombo region.

3. To describe the coping strategies used by households in times of hunger.
4. To draw from the empirical evidence and make recommendations to food security policymakers on strategies that can help vulnerable households to maintain self-sustaining food security strategies.

## **1.5 Importance of the study**

Scarcity of food in many households has resulted in changes in the rural households of Swaziland. As a consequence, food habits and eating patterns changed, which have resulted in many households relying on food aid as their primary source of food. The food aid is issued for a short period only, bringing the sustainability of such practices in a long-term context into question; however, it cannot be considered as a long-term solution to improve the food security of vulnerable households.

Many countries in SSA are food insecure due to factors such as climate change affecting food production and increased food prices. There is also a decrease in the consumption of nutritious food which leads to malnutrition. Balanced nutrition is vital as it promotes good health, better performance of an individual and improved production, which may improve the economy and provide food security.

To the knowledge of the researcher, no study has been conducted on understanding food security in vulnerable households in Swaziland. The majority of the research that was conducted concentrated on vulnerability with regard to climate change (Shongwe et al., 2014), factors influencing the choice of climate change and adaptation strategies by households (Nkondze et al., 2013), and the influence of HIV/AIDS on food security and households (Masuku & Sithole, 2009; Mavuso et al., 2015).

This study aimed at providing empirical data of vulnerable households, possibly assisting in improving food security, developing self-sustaining long-term coping strategies that could enhance food security, and provide information that could assist to improve food security policies in Swaziland. Furthermore, it will identify aspects that



need to be emphasised regarding healthy eating to improve food security through the community engagement of home economists and agriculture extension workers in the four regions of Swaziland.

Once the households understand the importance of food security, it would be easier for them to take part in the development and implementation of self-sustaining strategies. This could ensure physical, social, and economic access, to safe sufficient and nutritious food that meets their dietary needs that will limit malnutrition in the rural communities of Swaziland. Strategies that are currently in place, are not effective in bringing about improved and self-sustainable living in rural households, while improving their health and the production of food. Instead, the provision of food aid strategy has increased malnutrition and stunted growth.

## **1.6 Research design and methodology**

Implementing the objectives of the study necessitated a quantitative paradigm, with an explorative research design used by the researcher in pioneering the research. Creswell et al. (2012) believed that exploratory studies are done to satisfy the researcher's curiosity and desire for a better understanding of a specific situation at a certain time. Purposive sampling was used as respondents were selected based on a particular variable of interest (Powel et al., 2015). In this study, respondents were selected based on vulnerable characteristics such as receiving food aid in the form of food parcels and cash transfers, in addition to unemployment. Structured questionnaires were used as an instrument to acquire the necessary information as it is an accurate and efficient instrument (Queiros et al., 2017). As the study is descriptive and exploratory in nature, frequencies, and descriptive statistics were the main form of data analysis.

## **1.7 Outline of the dissertation**

Chapter 1 provides a general introduction of the study, followed by the problem statement of the research and research problem. Research objectives are formulated to guide the study. The importance of the study is highlighted, and a summary of the research design and methodology is given.

Chapter 2 provides an overview of food security in the SSA region, as food security trends are discussed in detail. Moreover, factors affecting food security in SSA are elaborated on. Furthermore, food security challenges in Swaziland are presented. Lastly, eating patterns and coping strategies used by vulnerable households in the Lubombo region are discussed.

Chapter 3 is an in-depth presentation of the research methodology that was used in this study. It includes the description of the research design, population, and sampling, including the target population and sampling procedure, the data collection instrument, data collection process, data analysis as well as limitations of the study and ethical considerations.

In Chapter 4, the results of the study are presented and discussed in detail. The demographic profile of KaLanga households, routine eating patterns and coping strategies in cases where there is a shortage of food, are discussed in detail.

Chapter 5 concludes the research. Recommendations and suggestions for future research are also included in this chapter.

## **1.8 Conclusion**

Swaziland has faced many humanitarian crises, one being the great number of food insecure households. Food insecurity has increased due to persisting droughts affecting production, as well as a poor economy exacerbating the situation. This study was undertaken to provide empirical data of vulnerable households, possibly assisting

in improving food security, developing self-sustaining long-term coping strategies that will enhance food security and could improve food security policies in Swaziland.

## Chapter 2

# REVIEW OF RELATED LITERATURE

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### 2.1 Introduction

Food security is one of the determinant factors of malnutrition in developing countries of the SSA (Swazi VAC, 2017). Malnutrition is associated with a shortage of food, which may result in nutritional deficiencies, including under nutrition, stunted growth and wasting, micronutrient deficiencies, obesity, and diet-related non-communicable diseases. According to the FAO (2015), household food security is the ability of a household to access sufficient and safe food to provide for all the dietary and nutrient requirements of all members of the household. On a more elaborate analysis, the NFSPS (2005) postulates that crucial aspects of the right to sufficient food comprise the availability of sufficient and adequate quality food necessary to satisfy the nutritional requirements of the people. Moreover, it includes accessibility of food in sustainable ways that do not interfere with the enjoyment and fulfilment of other human privileges. Food security is vital at all levels, specifically at the household level, and the lack thereof is associated with poverty as well as deficiency diseases (Ingram, 2011). Individual food security is mostly influenced by actions at local, national, and international levels (WFP, 2017).

Even though food security is at the forefront of many government developmental agendas, approximately 250 million people, which is 19.7% of the total population in SSA, are undernourished. This is an increase from 17.6% in 2014 (FAO, IFAD, UNICEF, WFP & WHO, 2020). In SSA, the majority of the undernourished population live in countries affected by conflict. The prevalence of undernourishment is roughly twice as high in conflict-affected countries with a protracted crisis, compared to countries not affected by conflict. Nutrition outcomes are also generally worse in these countries

(FAO, 2017). The WFP (2017) pointed out that both developing and developed countries continue to find achieving total food security as being challenging. Interventions such as food aid or food relief, food stamps and subsidised food production have been provided to alleviate the problem (FAO, 2015). However, due to insufficient resource bases to sustain these interventions, the results have been less successful (WFP, 2017).

The right to food was central in the Universal Declaration of Human Rights and adopted by the United Nations in 1948 (World Bank, 2008). Moreover, global food security improvement is an issue that has been at the centre and the main agenda of the policy discussions since the World Food Summit of 1996 (Trueblood, 2012). Although many humanitarian organisations highlight the right to food, it remains a violated right (Clover, 2003). Also it is in line with sustainable development goals.

Ingram (2011) stated that it is worrying that the series of nutritional outcome indicators in the SSA region did not reflect the undernourishment trend, with the gradual decline in the prevalence of stunting and wasting for children under the age of five years. Countries have made progress in the development of policy frameworks and investment plans that are aligned with the goals of the Malabo Declaration and the Sustainable Development Goal 2 (De Graaf et al., 2012). The Malabo Declaration placed agriculture as its primary development agenda and as the main strategy to achieve targets on food and nutrition security, improved livelihoods, and shared prosperity. However, the disturbing trends in undernourishment emphasised the need for concerted actions and considerable efforts to achieve the Sustainable Development Goal 2 by 2030 (FAO, 2017). Currently, in developed countries, food aid is allocated more resources than agriculture and rural development, despite that investing more resources in agriculture would increase food production (FAO, 2012).

Considerable attention should be given to food security needs to improve the status in SSA countries. In addition, water and land resources require better management as a future water resources management crisis in SSA are projected (Cooper et al., 2020; Hughes et al., 2019; WFP, 2020). Shortage of water greatly affects crop growth which is highly dependent on water. Moreover, the population growth rate tends to outstrip the food production rate, which may lead to security uncertainties. In SSA, several countries are low-income and food insecure, besides also being socio-economically and environmentally vulnerable (Fitawek et al., 2020). Subsequently, there is a need to give this situation full attention to improving food security in SSA. This is to ensure that sustainable development goals are reached.

## **2.2 Food security definitions**

There is no universal definition of food security, as several authors gave different perspectives on its definition. Du Toit (2002) distinguished between four levels to define food security, namely household level, community level, national level, and international level. Household-level food security denotes the availability of and access to food in one's home. A food secure household is regarded when all members of the family do not live in hunger or fear of starvation. Moreover, Fitawek et al. (2020) were of the opinion that at the community level, food security can be defined as a condition whereby residents in a community can obtain a safe, culturally accepted, nutritionally adequate diet through a sustainable system that maximises community self-reliance. Food security at the national level refers to the condition whereby the nation can produce, manufacture, import, retain and sustain food needed to support its population with the minimum per capita nutritional standards. Cooper et al. (2020) describes international food security as the ability of people to secure adequate food. Ingram (2011), the FAO (2016) and Vella (2012) defined food security as the access to enough food by all people at all times for an active and healthy life. In a more elaborate analysis, Vijaya et al. (2020) concurred that food security is sustained access to

adequate and quality food at all times in ways that are socially acceptable in order to maintain a healthy life. Furthermore, Clover (2003) mentioned that the Rome Declaration on World Food Security defined food security as “food that is available at all times, to which all persons have means of access that is nutritionally adequate in terms of quantity, quality and variety and is acceptable within given cultures”. In support, the NFSPS (2005) contended that food security is achieved when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Consequently, availability, access, sufficient, and affordability are all elements of food security (FAO, 2016).

Aliber (2009) observed that most food security definitions include the phrase “at all times”, while the food aids given to vulnerable households are given for a short time, which means that people remain food insecure. An understanding of this definition with the “at all times” phrase is not only necessary for the government to guarantee that the citizenry has access to food at all times, but also in addressing food security issues, and in designing food security interventions and developing relevant policies. The food that is provided, should be nutritious and sufficient for vulnerable households (Fitawek et al., 2020).

The National Food Security Policy of Swaziland (Kingdom of Swaziland, 2005; hereafter referred to as NFSPS, 2005) acknowledged four pillars of food security which are the availability of food, access to food, the utilisation of food and nutritional requirements, as well as stability in food provision. The availability of food implies that enough food of sufficient quality is physically or economically available (NFSPS, 2005). In other words, optimum availability is when food is enough to meet the consumption by people at all times (Brauch, 2006). Access to food is the ability of individuals to acquire the food, either through purchasing, bartering or self-production (Gibson, 2016). Mann and Truswell (2012) described food access as to how people access food, as difficulty in obtaining food can affect them in many ways. The utilisation of food translates to

an active, healthy life for every individual (Zaehring et al., 2018). For this to take place, a nutritionally adequate diet should be biologically utilised so that satisfactory performance is maintained in growth, resistance to disease, pregnancy and lactation, and physical work (WFP, 2017). Stability underpins the access, availability and utilisation of food and refers to risk mitigation to ensure stable supply (Gibson, 2016). Furthermore, the Swaziland Poverty Reduction Strategy and Action Plan (Kingdom of Swaziland, 2007) described the stability of food as sufficient food at all times. In principle, food should be sufficiently available, both in quantity and quality and also provide variety (FAO, 2015).

The demand for food is addressed by food access, which is influenced by economic factors, physical infrastructure, and consumer preferences (Oseni & Masarirambi, 2011). The FAO (2015) stated that food access should ensure a consistent and adequate supply of energy and nutrients through sources that are affordable and socio-culturally acceptable to people at all times. However, individuals do not always have access to sufficient food in addition to not being aware of the specific functions of food in the body. Consequently, poor nutritional decisions could be made when food can be accessed, exacerbating the situation (NFSPS, 2005). In addition, there is a good probability that individuals in the low-income category cannot access the nutritious food that is available in the markets. Lack of nutritious food leads to deficiencies (Herforth & Gill, 2015).

### **2.3 Food security in sub-Saharan Africa**

The food security of SSA is presented in four parts. The first part is concerned with the past and current trends and assumptions pertaining to the study. The second part is an overview of factors that causes challenges for achieving food security in SSA. Third, factors that affect food security, and fourth, an overview of factors that contribute to achieving food security in SSA are discussed. This is followed by possible intervention strategies.



### **2.3.1 Food security trends in sub-Saharan Africa**

According to Nischalke et al. (2020), food security trends are described as food changes in the direction of food consumed to form food habits. The food trends are generally influenced by the geographical location of a country, as the climatic conditions influence what is grown and consumed in a region. Subsequently, the availability of food can affect food trends (Mhlanga-Ndlovu & Nhamo, 2017).

Trends in food security show that there is great diversity within countries which give rise to specific challenges and opportunities (FAO, 2017). Food insecurity cannot be attributed to the failure of agriculture to produce food in sufficient amounts alone, but the failure of other livelihood activities such as insufficient paid work and failure of development policies. With these aspects, access to enough food cannot be guaranteed (De Graaf et al., 2012). Moreover, the WFP (2020) stated that the production and the various forms in which access to food takes place in SSA, are closely related to the broader economy. As a result, Ingram (2011) stated that not all diversity may seem to have a direct bearing on food security.

Further trends indicated that the crops that feature most strongly are maize, sorghum, and beans (FAO, 2017). However, countries in other regions consume millet, teff, and wheat (Clover, 2003). Some countries consume roots and tubers, such as Rwanda, Lesotho, and Malawi (FAO, 2017; Gibson, 2016). Fermont (2009) stated that the roots and tubers that are consumed include cassava, potatoes, sweet potatoes, and yams. People in these countries consume about 200 kg grain per year (De Graaf et al., 2012). In most countries in SSA, the production of crops had shown a great decline due to rainfall shortage, adversely affecting food security (Azzarri & Signorelli, 2020; WFP, 2020).

### **2.3.2 Food security in sub-Saharan Africa**

During 2006, the FAO observed that close to 200 million people, which is almost 23% of the population in SSA, were undernourished. World Food Programme (WFP) (2020) reported that during 2019, the number of undernourished individuals increased to 237 million, although the percentage decreased to 20%. This is most probably due to population growth (Ville et al., 2019). The region remained vulnerable to frequent food crisis, triggered by factors such as conflicts, pests, famines, floods, and unstable economic conditions (Dubois, 2013). Numerous reasons can explain this situation, which varies across countries (FAO, 2006). Although the number of hungry people in SSA has decreased from 31% in 2000, food insecurity has increased. In Southern Africa, an estimated 40 million people are food insecure, and nine million need immediate food assistance (Ville et al., 2019).

Agriculture is the backbone of economies in the SSA region (Brauch, 2006). It accounts for over 30% of the total Growth Domestic Product (GDP) and more than half of its export earnings. During 2019 the real GDP in SSA grew with approximately 3%, compared to the previous year (Central bank of Swaziland, 2017). The outlook for 2020 for this region is considerably worse than was anticipated in April 2020 and subject to much uncertainty. Economic activity during this year is projected to decline by roughly 3.2%, reflecting a weaker external environment and measures to contain the COVID-19 outbreak (International Monetary Fund [IMF], 2020). However, a daunting situation was faced in the region because of its dependency on rain-fed agriculture, which is vulnerable to low yields because of poor annual rains and droughts. Rural areas are home to more than 70% of the population, and livelihoods of roughly 85% of the people in rural areas are dependent on rain-fed agriculture and other agricultural-based activities (WFP, 2015). The performance of agriculture has been below expectation and fluctuating due to the effects of climate change (FAO, 2007). To encourage sustainability, governments need to design broader initiatives in support of

agricultural development in rural areas and other economic sectors (Rosegrant et al., 2009).

As hunger was predicted to worsen in the SSA region in the next decades, improvements in income, economic growth and food security in the region are imperative. Moreover, immediate measures can be applied to ensure adequate access to food for everyone to improve food security and reduce hunger (Lieb, 2013). For the SSA region to achieve food security, priority must be given to economic growth in sectors where the poor need to work to improve their purchasing power (FAO, 2007). De Graaf et al. (2012) characterised the situation in the SSA countries as follows:

- Low GDP per capita and a high share of agriculture in GDP.
- Half of the agricultural land is situated in arid and semi-arid zones, often with poor quality soils.
- An over-reliance on rain-fed agriculture which is highly vulnerable to fluctuations in rainfall.
- High levels of land degradation, including wind and water erosion and elevated levels of soil mining, with low levels of fertilisation.
- Increased malnutrition and high prevalence of diseases, in particular HIV/AIDS, resulting in low life expectancy and shortage of labour.
- High transport costs, small markets, and lack of infrastructure.
- A high rate of population growth, close to 3% per annum.
- A high percentage of the population living below the poverty line and consequently, high dependency on food aid.

The WFP (2020) highlighted that food production and food security are not only affected by the cultivation of cash crops and livestock rearing but also affected by technological, physical, and human factors. Cash crops bring in income which helps with purchasing of farming inputs and saving for greater security in future food insecure emergencies. Cash crops in SSA include coffee, cocoa, tea, cotton, sugar cane

and oilseeds, which are mainly grown for export purposes (Clover, 2003). The income generated from cash crops plays a role in supplementing the purchase of other essential household food items. The FAO (2017) highlighted that livestock rearing may affect food crop production because it competes with crops for grazing land, other resources, and food as feed. However, they are complementary in providing manure and draught power. Draught working animal is a classic example of large-scale application of appropriate technological concepts to millions of small and marginal farmers for cultivation and small-scale transportation. Livestock can also provide a good source of protein to the diet. Fitawek et al. (2020) stated that in some countries in SSA, livestock plays a complementary role in crop production as they are used for ploughing.

Food security and agricultural development trends indicate that countries have been able to increase their crop production by expanding the cultivation area and crop yields to match the population growth (FAO, 2017). The growth in cultivation and crop yields differs from country to country. For example, in Senegal and South Africa, cultivated areas declined, but there was an increase in yields. However, in Rwanda, cultivated areas increased, but yield stagnated as a result of the poor quality of the soil (IMF Working Paper, 2020; WFP, 2020).

### **2.3.3 Factors affecting food security in sub-Saharan Africa**

Several factors affect food security negatively in SSA. Although many countries in SSA attempted to improve food security, many challenge limits progressed (Young et al., 2011). Despite the initiatives, strategies and some technological advances put in place by SSA countries, attempts to achieve food security have proven futile, which is evidenced by the prevailing food security challenges in the region (Bremner, 2012).

One food security challenge is the prevalence of undernourishment, which appears to have increased from 20.8% to 22.7% between 2015 and 2016. At the same time, the SSA population's inability to access food has increased and has resulted in severe food

insecurity in the region (FAO, 2017). Several challenges negatively influence food security, which include climate change, politics, economic crisis, increased urbanisation and HIV/AIDS (Clover, 2003; FAO, 2017; Lieb, 2013). The following discussion presents the factors affecting food security in SSA countries.

### **2.3.3.1 Climate change**

Climate change is one of the causes of lower food production in SSA countries. According to Dubois (2003), climate change is a change of weather patterns which prolongs for a period of time. In support, Szabo et al. (2016) contended that climate change denotes the change in the regular weather or temperature that continues for an extended period. Climate change can result from natural causes, human activities through the emission of greenhouse gases such as carbon dioxide and methane, as well as from changes in land use (Wheeler & Von Braun, 2013). Climate change has severe environmental, economic, and social impacts (Fitawek et al., 2020).

Climatic conditions are a crucial factor to increased food security in the SSA region (FAO, 2017) and are also considered a threat to food production and agriculture because of the weather changes (Sasson, 2012). A study conducted by Szabo et al. (2016) established that climate change had become one of the greatest threats to food security, and the unpredictability of the weather patterns forces farmers to put little investment in agricultural production which also threatens food security. Moreover, with the rise in temperatures, natural disasters such as floods and droughts will become a recurring phenomenon and worsen food security. Predictions made by the FAO in 2012 was that by 2050, the African continent shall experience a severe drought resulting from climate change, with an additional 30 million African people being affected by famine (Clover, 2003). In addition, climate change causes temperature changes which affect rainfall patterns and lead to extreme weather conditions. A projected increase of 6 °C in temperature and a decrease in rainfall by 40% was

predicted where SSA? Africa (WFP, 2020). As a consequence, rain-fed crops will be impacted, causing a decline in the economy (Vijaya et al., 2017).

Developing countries are more at risk and vulnerable to climate change and variability than developed countries, because of their high dependence on climate-sensitive agriculture for their economies, low adaptive capacity, few resources, and options to combat climate change and variability (Wheeler & Von Braun, 2013). Their vulnerability to climate change emanates from the fact of being predominantly located in the tropics, which are arid and semi-arid (Manyatsi et al., 2010). Although climate change is global, its impact is geographically diverse and increasingly being felt and recorded across a range of regions, communities, and ecosystems (Duncan, 2018).

### **2.3.3.2 Conflicts and politics**

Conflict is an active disagreement between people with opposing opinions (Dubois, 2003). War and political disruptions are contributing factors, negatively impacting both household and national food security (Clover, 2003). For instance, the WFP (2020) mentioned that in 2016, the majority of the undernourished population in the SSA region resided in countries affected by conflicts. In the conflict-affected countries, the prevalence of undernourishment has doubled, and the nutritional outcomes in those countries were worse (FAO, 2017).

Moreover, failure in governance has resulted in a poor economy in SSA (Clover, 2003). The impact of conflict on rural households is severe in countries with large rural and agricultural sectors (WFP, 2020). Political unrest and conflicts led farmers not to produce enough food due to displaced populations, destroyed infrastructure and damaged landmines (Garbino, 2019). In Swaziland chieftaincy disputes is rife which results in ample land not cultivated. This had hindered food production especially in the rural areas of Swaziland.

### **2.3.3.3 Economic crisis**

Numerous countries in SSA, including Swaziland, are challenged by poor and slower economic growth, which has led to food insecurity at both household and national level (FAO, 2017). The economic crisis has led to governments reducing budget allocations, which have affected agriculture more than any of the other sectors (FAO, 2006). According to a review conducted in ten countries, the government budget shares of agriculture declined from 5% to 3.5% (Bremner, 2012). The decline had resulted in low food production in the SSA. In addition, the economic crisis had led to a spike in food prices which increased food security shocks (Abdulai & Aubert, 2004). Low economic growth was a challenge facing SSA countries, resulting in reduced purchasing power (Nindi & Odhiambo, 2015).

### **2.3.3.4 Increase in food prices**

The rising food prices, increasing frequency and magnitude of its volatility have worsened the food security situation for Africa's population (Mhlanga-Ndlovu & Nhamo, 2017; World Bank, 2008). The increase in food prices led to households in the SSA being most vulnerable, as they cannot afford to purchase enough food to sustain them (Lieb, 2013). Also, the conversion of food grains towards the production of biofuels, higher energy prices and depreciation of the United States Dollar (US\$) has led to food price increases (De Graaf et al., 2012). Concerns have been raised regarding the use of grains for human consumption and the use of land to produce biofuels, in addition to grain used as feed for raising livestock (Gibson, 2016).

More people consume animal-based products due to higher incomes. This is especially true if the land is given up in favour of producing cash crops such as sugar cane and cotton, instead of food crops (Mhlanga-Ndlovu & Nhamo, 2017). Cash crops may improve the buying power of households; thus, food security is improved. Prices increased from 20% to 100% during the period 2013–2015, driven by factors such as production of biofuels, climate change, and politics (Powel et al., 2015). For this reason,

the poor spend more of their earnings on food. The increase in food prices has caused most households to use more of their income on food, rather than other essentials such as health care, housing, fuel, recreation, and savings (Nindi & Odhiambo, 2015). Lower-income households tend to spend a large share of their income on food and are also vulnerable to any kind of shock (WFP, 2020).

#### **2.3.3.5 Barriers to market access**

Barriers in penetrating the market, in addition to poor infrastructure, is another challenge that negatively impacts food security in the SSA region. This is caused by scarce resources, information dearth, inadequate supporting institutions, and poorly drafted policies in place (Ingram, 2011). Infrastructure is a challenge in the sense that farmers cannot profitably take their produce to the market without an increase in transport cost, which presents a barrier to market penetration. This results in produce being sold at lower prices locally, due to poor roads and lack of transport (Zaehringer et al., 2020). Bremner (2012) mentioned that highly competitive markets are not easy to break because when farmers want to sell their produce, they are forced to adhere to objective standards such as size, quantity, and quality. Lastly, Wheeler and Von Braun (2013) added that farmers are limited by Africa's high export costs to get access to the international competitive markets.

#### **2.3.3.6 Handicapping policies**

Policies enhancing agricultural productivity and adapting to climate change should primarily focus on food security initiatives (Selami et al., 2011). Poorly agricultural development policies have had a negative impact and have greatly affected food security in SSA (FAO, 2017). Once policies are not inclusive in design of structures and institutions, it handicaps development. Effective implementation and delivery of policies and investment plans, aligned with signed declarations setting right priorities and strengthening institutional capabilities, are conducive to improving food security (Shewmake, 2008). The implementation of food security policies in a country can



improve food security in a way that may result in aligning with the signed declarations, especially those such as the Malabo Declaration (Cooper et al., 2020).

#### **2.3.3.7 Diseases and infections**

Diseases and infections continue to affect SSA countries (FAO, 2017). Diseases such as malaria, tuberculosis (TB) and HIV/AIDS reduce not only the production of food but also household acquisition (Aberman et al., 2014). This also has a direct implication for the utilisation pillar of food security since it will increase pressure on state health care. The FAO (2017) highlighted that in SSA countries, more than two-thirds of the most affected population are residing in rural areas, directly influencing agricultural production as most food production takes place in rural areas.

#### **2.3.4 Improving food security in sub-Saharan Africa**

Rolfes et al. (2012) believed that everyone in society can assist to improve food security. Sufficient supply of enough food throughout the year and a good income source can enable families to procure enough food required by each individual in a household (Mann & Truswell, 2012), thereby also improving food security in vulnerable households. A more strategic approach is necessary for developing and implementing effective international, national, and regional food security policies (WFP, 2020).

Tackling the causes will result in new long-term approaches, possibly improving food security in SSA. Production of sufficient food can help to improve food security at household, regional, and as well as national level (Ingram, 2011). In addition, the use of technology in food production can also contribute immensely to crop yield increases. Technology can also be used to produce seed varieties that are suitable for current climate conditions (Balehegn et al., 2020).

##### **2.3.4.1 Improving food access**

Food access is a matter of household and individual income capabilities and rights (Wheeler & Von Braun, 2013). Accessibility of food throughout the year helps to

improve food security at all levels. Changing to new crops that will favour the conditions that had been caused by climate change can greatly influence food production (Balehegn et al., 2020). Indigenous crops are no longer suitable for the current climatic conditions, which results in low yields; thus, negatively affecting food security. Improving property rights, traditional land, and water rights can enhance food security as it increases access. However, challenges such as soil erosion, land grabbing and shortage of water can greatly hinder food security (Wheeler & Braun, 2013). Availability of land and more equitable access to it can enable many households to produce crops which can improve food security in Swaziland (E VAC, 2020).

#### **2.3.4.2 Changing agricultural practices**

Changing agricultural practices is one aspect that can help to improve food security in SSA; thus, SSA governments should provide the required assistance to local small-scale farmers to intensify production (Balehegn et al., 2020; Hanjra & Qureshi, 2010). A change in agricultural practices can improve soil structure and increase yields which can improve food security even in the rural areas of SSA countries. Von Braun (2010) observed that even though previous financial injections in agriculture have assisted in increasing agricultural productivity, the practice should also be improved so that enough food can be produced to sustain the growing population. Investments in agricultural research and development would help the poor.

Moreover, research should ensure that technological innovations such as biotechnology, bio-fortification and nano-technology are assessed by small-scale farmers in an attempt to increase their productivity and enhance the nutritional value of their food. New agricultural technologies should assist in the environmental damage that has been caused by intensified land use (Sun et al., 2020). Gamborg et al. (2012) stated that adopting new policies was necessary, especially concerning biofuel production. Many governments did not support biofuel production, stating that the main issue was land, which should instead be used for crop production. The availability

of land for crop production can address SSA countries' hunger challenges, as it can enable the population to produce enough food. Land grabbing which is illegal plays a major role in this regard, as SSA countries lease vast tracts of their land to other countries instead of their own people (Fitawek et al., 2020).

#### **2.3.4.3 Reducing food losses**

In developing countries, food losses are mainly attributed to the lack of knowledge or adoption of storage technologies on farms and the non-existence of food chain infrastructure as these can prolong food storage (Zaehringer et al., 2018). Different strategies, such as the public investment to improve transport infrastructure, are required to tackle the wastage of food in SSA and reduce the opportunities for spoilage. Moreover, better-functioning markets and financial access could increase the efficiency of the food chain (Wheeler & Von Braun, 2013), as well as the introduction and use of preservation methods to reduce food waste (WFP, 2020). Existing technologies and best practices need to be widely propagated by education and extension services. The majority of food is spoiled before it reaches the market; some of the primary reasons are crops damaged by insects and pests, inferior quality products due to lack of infrastructure and machinery, and insufficient storage and processing technologies (Quested et al., 2020).

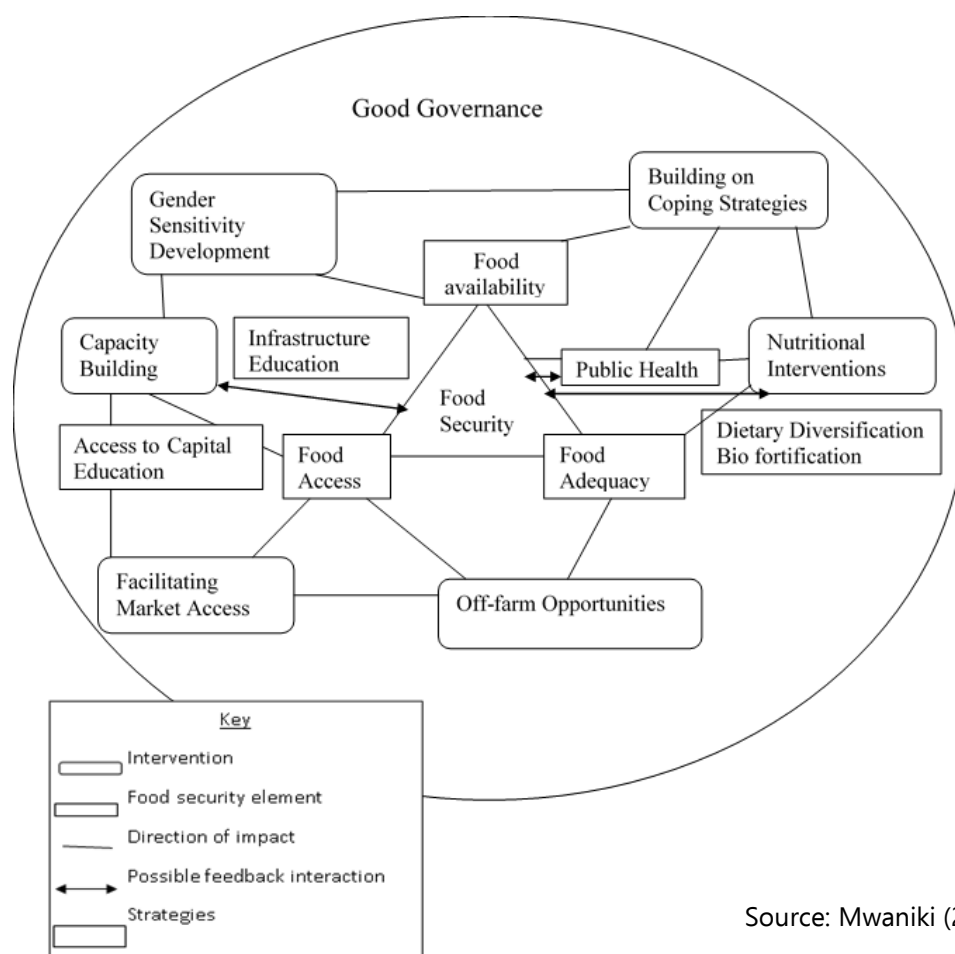
#### **2.3.4.4 Improving political and economic policies**

Political and economic stability, as well as favourable regulatory frameworks, can improve food security in SSA countries (FAO, 2006). Improvement of these factors will ensure more access to money for the purchase of farm inputs. Stability in the political system will also enable the population to work towards infrastructure development in the country which can improve access to food. In addition, financial resources, institutions, political will, and general mobilisation could not only help to improve political and economic policies but could also help the improvement of agricultural production (FAO, 2017). An increase in agricultural production could lead to a

consequent increase in food production. Selami et al. (2011) stated that to achieve political stability, future conflicts should be limited and improved governance practices should be adopted; thus, governments should ensure that armed disputes are resolved. This can improve commercial imports, enhance trade, and consequently improve food security.

### 2.3.5 Possible intervention strategies

Several intervention strategies can be used to improve food security in vulnerable households. Despite the use of the strategies, food insecurity has continued to affect SSA countries; thus, it has resulted in malnutrition (WFP, 2020). Figure 2.1 illustrates the interaction between possible intervention strategies and market opportunities as proposed by Mwaniki (2011).



Source: Mwaniki (2011)

**Figure 2.1: Primary conceptual framework on the mechanism of the proposed food security intervention in achieving food security in Africa**

These strategies are discussed in the following subsections.

### **2.3.5.1 Nutritional interventions**

Nutritional interventions can play a significant role in improving food security, although it is not the sole solution. Nutritional interventions are implemented once national problems are identified (Cooper et al., 2020). Rolfes et al. (2012) suggested that nutritional interventions can include education about correct dietary and lifestyle practices, nutritional counselling, meal modifications, proper use of medication and the use of alternative treatments such as homeopathic remedies. Food habits and culture should be taken into consideration for an intervention to be successful (Balehegn et al., 2020).

The absence of nutrient dense foods leads to malnutrition, increasing morbidity and mortality rates, causing loss of economic activity, and diminishes children's cognitive abilities (Godfrey et al., 2010). Food insecure households or individuals require assistance and support for the management of malnutrition and related illnesses (Mhlanga-Ndlovu & Nhamo, 2017). Cohen and Garrett (2010) advocated for emergency food assistance, nutrition interventions and safety nets for food insecure people. This will help to reduce the problem, although it will not be solved permanently. Mwaniki (2011) was of the opinion that the SSA region should consider concentrating its resources and invest in long-term interventions that have lesser costs for maintenance, high likelihood to reach the poor who are at risk and vulnerable to food insecurity. In addition, intervention such as dietary diversification, food sufficiency and bio-fortification can be used to improve food security. Interventions can result in positive dietary behaviour and change of lifestyles if implemented successfully, reducing malnutrition and deficiency diseases which can improve food security (WFP, 2020).

### **2.3.5.2 Facilitating market access**

Lack of access to markets has caused farmers not to sell their produce. According to Mwaniki (2011), a number of people in the SSA engaged in enterprise initiatives which became sustained and grew once they could access markets and sell their services and products. Thus, it is necessary to remove trade barriers. This will enable households to sell their produce and earn an income. A study conducted by the FAO (2017) established that the projected gains of the world trade liberation tend to be minimal in SSA and that countries with a competitive advantage in the markets will get the income gains from trade liberation (Zaehring et al., 2018). These will help to improve food security.

### **2.3.5.3 Rural off-farm opportunities**

Rural off-farm opportunities can benefit rural households. The rural–urban migration dynamic could be limited by the provisions of off-farm employment opportunities (Garbino, 2019). People from rural areas will reconsider migrating to urban areas if opportunities are availed to them. Moreover, SSA countries can examine other possibilities such as cottage industries that process food crops by value-adding or enhancing shelf life through preservation techniques (Mwaniki, 2011). This can help to improve exports to other countries and create job opportunities (Gibson, 2016).

### **2.3.5.4 Capacity building**

Capacity building would empower people. In Africa, attention should be put more on capacity building, research and development, capital investment and infrastructure development (FAO, 2017). Education through capacity building not only gives one the power to read and be well informed but enables one to communicate effectively and efficiently. Mwaniki (2011) stated that education can be used as a food security intervention by passing knowledge about improving food security and health to people through different types of media such as radio and television broadcasts, and

electronic and social media. In addition, it can be through the development of skills to individuals to empower them to produce their own products for selling (Gibson, 2016).

#### **2.3.5.5 Gender-sensitive development**

Gender parity presents a significant challenge for food security in SSA (Gibson, 2016). A need to focus more on women leadership is paramount as one of the mechanisms to improve food security (Committee on World Food Security, 2012). Women make a notable contribution to food security in developing countries, although they have less access to resources and opportunities (Committee on World Food Security, 2012; Gibson, 2016).

In Swaziland, this is addressed through the “Women Farmer of the Year” initiative, which is run annually. Female farmers sell their maize to the National Maize Cooperation, and the winner (the farmer who sells the most) is awarded a prize. Women are well able to be managers of natural resources, food producers, income earners and custodians of household food security (De Graaf et al., 2012). The FAO (2017) stated that education of women is known to produce powerful effects on nearly all dimensions of development. Moreover, the effectiveness of women in contributing to food and nutrition security will only be fully achieved once gender parity is eliminated and the value and significance of their role in ensuring food security are promoted (FAO, 2017; Mwaniki, 2011).

Women are often not allowed access to land, especially through Swazi culture. In order to access land, a woman has to be married. According to Sasson (2012) in a study conducted in Ethiopia in 2009, approximately 25% of the female teenagers had been found food insecure, while only 16% of the male teenagers were food insecure. This indicates that some women in SSA countries are prone to food insecurity, whereas if they can be food secure, they can assist in food production. The amount of hard work that women should be doing on their farms is limited by gender-related constraints which also limits agricultural production (FAO, 2015).

### **2.3.5.6 Coping strategies**

A coping strategy measures behaviour and strategies that households utilise when they cannot access enough food (Swazi VAC, 2016). Incorporating coping strategies has not helped families to improve their food security and nutritional status. These coping strategies include reducing the number of meals per day, sacrificing dietary diversity, selling of belongings and theft (Gibson, 2016). What could be of value is to use health centres for information on nutritional education in an effort to improve food security in the communities (Bidogeza et al., 2011). Approaches applied to adjust coping strategies should have a long-term aim that will aid in tackling the food security problem, especially in the rural areas of the SSA (FAO, 2017).

### **2.3.5.7 Good governance**

Another mechanism which can improve food security is good governance. Good governance could ensure that all the strategies mentioned above can be instrumental, effective, and work in a corrupt-free and serene environment. To aid in the improvement of food security through ensuring good governance, separating political interests from the basic needs of a nation is critical (FAO, 2017).

## **2.4 Food security and the related challenges in Swaziland**

There are numerous challenges affecting food security in Swaziland, which have been of concern even after five decades of independence. A weak and deteriorating economy, high unemployment, rapid population growth, uneven distribution of resources, all combine to worsen already persistent poverty and food insecurity, especially in rural areas in Swaziland (Nindi, 2015). The country has been relying on international aid and food imports from other countries to fulfil the population's food requirement (Vella, 2012). Swaziland is a small country with a population of 1.2 million people who are overwhelmingly rural and live on Swazi Nation Land. Sixty-three



percent (63%) of the populace lives in poverty and survive on less than US\$1.25 per day (E VAC, 2019).

A study conducted by the WFP (2015) established that even though a large proportion of the people of Swaziland engage in subsistence farming, more than 60% of the food consumed is imported from South Africa. The reliance on South Africa for food has caused high food prices, making it difficult for vulnerable households to gain access to food. Nkondze et al. (2013) pointed out that the poverty level in Swaziland is at 69%, which renders the people vulnerable to external shocks such as diseases and climate change. Moreover, Swazi VAC (2017) indicated that the poverty level is high in the rural areas of Swaziland, especially the Lubombo region, affecting food security negatively.

The national staple food, maize, is the primary crop in both local production and imports, acting as an approximate indicator of the availability of a sufficient amount of food (WFP, 2016). The persistent food shortages in Swaziland is caused by a decline in maize production, which contributed to food insecurity in the country (Mhlanga-Ndlovu & Nhamo, 2017). The decline in maize production has been due to persistent drought which has caused people not to engage in crop production. Roughly one-quarter of the population, especially in rural areas, requires food assistance. Consequently, poor rural households are predominately relying on international food aid (FAO/WFP, 2015). The food aid is, however, not enough to sustain the households, and results in practising coping strategies. Maize production had decreased by 60% due to the El Niño drought, which led to failed crops in most parts of the country (Swazi VAC, 2017). Due to the drought, people were not able to produce their own food and became more reliant on food aid from different organisations. As mentioned, long-term food aid does not solve the problem caused by shortage of food (WFP, 2020).

In contrast, the household income and expenditure study of 2016/2017 found that the country's overall national poverty headcount ratio declined from 63% in 2010 to 58%

in 2017, and the extreme poverty headcount ratio declined from 28.8% to 21% during the same period, as reported by Mavimbela (2018). In 2018, the USAID stated that over 177 000 people would need urgent food assistance in Swaziland during the 2017/2018 lean season (see also WFP, 2020). The USAID (2018) defined a lean season as the period where food is scarce. During lean seasons there is a high demand for food, with a consequent increase in food prices. When the food prices spike, food insecurity increases significantly as the majority of vulnerable households find it difficult to afford food (Cooper et al., 2020).

The WFP (2009) stated that food security challenges in Swaziland can also be attributed to the effects of HIV/AIDS and poverty, in addition to natural disasters. Moreover, financial and economic difficulties and the poor estimates for Southern Africa Customs Union Revenue, are challenges faced by Swaziland which have contributed in the slow growth of the economy and deflation of the South African Rand (ZAR), to which the Swazi currency is fixed (WFP, 2017). Due to the continued slow economic growth, salaries have remained the same, especially for government employees. Furthermore, businesses were closing down as most supplied goods to the government, with its own payment challenges resulting in their closure (Mhlanga-Ndlovu & Nhamo, 2017). This has affected food security, as many people have been left unemployed and could not afford to buy food.

#### **2.4.1 Agriculture and climate change**

Agriculture may improve food production. Food production is limited by poverty and climate change which consequently restricts the ability of farmers to purchase more productive inputs, such as seeds and fertiliser (Vella, 2012). In addition, in the previous years (from 2000 up 2019), Swaziland recorded the lowest rainfall which caused agricultural activities to only start in December (Herforth & Gill, 2015; Swazi VAC, 2019). The late growing of crops had resulted in most farmers having no yields and some low yields. The impact had been so severe that most families were left without food (Swazi

VAC, 2017). This caused Swaziland to be a net importer of food and an increased vulnerability to food prices in the region.

Furthermore, UNICEF (2016) pointed out that the situation was exacerbated by the poor economic performance of the country and reduced income from the Southern Africa Customs Union. The decrease in the adoption of improved agricultural practices and techniques also contributed to the decline in the production of food (Vella, 2012). Adoption of new techniques and technologies can help to improve yields which could lower food prices. The continuous farming and overgrazing by a growing livestock population have severely degraded land. These practices led to damage to the soil structure that further contributed to low yields. The over-reliance on maize which is rain-fed, also hinders efforts to achieve food security (FAO/WFP, 2015).

Efforts of providing water should be made to enable areas affected by drought to produce their own food. The country has to consider growing drought-resistant crops which can improve food security. One such an example is sorghum that can be grown in the Lowveld of Swaziland, which can improve food security. On the other hand, many farmers do not own or lack access to oxen which is considered an essential production resource, forcing them to be reliant on borrowing or hiring tractors which the farmers cannot afford (World Vision, 2010). A factor that further discourages production is the government's price and tariff control on certain agricultural products (NFSPS, 2005). The prices of farming inputs are not controlled, resulting in farmers not being able to afford inputs. Moreover, the absence of adequate and readily accessible market information to producers, lead to loss of food as the food gets spoiled before reaching the markets (FAO, 2017).

Climate change has severe global environmental, economic, and social impacts (FAO, 2017). Mavuso et al. (2015) defined climate change as a change of weather patterns for an extended period of time. The changes in temperature have resulted in changes in land and water shortages, affecting agriculture production in Swaziland (Mavuso

et al., 2015). This has caused changes in foods habits and has immensely affected food security. Crop production has been affected in a way that people in rural communities are unable to produce their own food (FAO, 2017).

Climate change is causing a shift in the distribution, incidence, intensity of pests, diseases, and attack by alien species (FAO, 2012). This increases crop protection costs as a lot of pesticides has to be used to control pests, and if crops are not properly protected, yields are reduced. Many farmers in the Lubombo region are unable to afford pesticides, resulting in low yields (Swazi VAC, 2012).

Climate change and food security have several interrelated risks and uncertainties for societies and ecologies (Mavuso et al., 2015). Climate change effects have resulted in a change of livelihood for people living in the rural areas of Swaziland, especially the Lubombo region. Many households have since discontinued farming and are dependent on social interventions. During the 2018/2019 cropping season, the Lubombo farmers cultivated only 10% of their arable land, whereas 40% of the arable land had not been cultivated over the past ten years due to shortage of rain in the year 2010 (WFP, 2020). Households have resolved to stop farming because they waste a lot of money in farming inputs and do not get yields.

#### **2.4.2 Health, nutrition, and HIV/AIDS**

Poor nutrition is a cause of concern in the rural areas of Swaziland as it has affected the health of many Swazi people. Swaziland's health system faces multifaceted human resource demands, which is also similar to health systems in many African countries (Fielding-Miller et al., 2014). Moreover, the country's management system, which includes financial administration and allocation of resources, are centralised and unresponsive to new and emerging needs (FAO, 2017). The government should prioritise the health system to improve the health of the people to subsequently increase production. Since health services are centrally, regionally and facility

managed, there is a need to strengthen the coordination capacity across these levels to improve efficiency (Tevera et al., 2012).

Another factor which continues to be a major challenge in the country and has also affected the production of food is the burden of communicable diseases, such as HIV/AIDS (United Nations [UN], 2016). HIV/AIDS has also habituated to the severe TB co-epidemic (World Vision, 2010). Most deaths occur between the ages of 15 to 49 years, which is the nation's most productive population segment (Swazi VAC, 2019). These may cause people to be bedridden and unable to work to earn an income to buy food. According to NFSPS (2005), communicable diseases and other diseases can be managed by promoting nutrition and also improving the delivery of food to the poor and vulnerable (WFP, 2020). Food intake for people with AIDS/HIV and TB needs to be increased, and a balanced diet is very important to boost the body's immune system (Molewa, 2009).

Food security and nutrition are of vital importance for individuals, households and communities affected by HIV/AIDS. Poor nutrition statuses may quicken the progression of HIV/AIDS-related illnesses such as TB (WFP/WHO, 2006). Yet, there is substantial evidence indicating that food insecurity and poor nutrition are barriers to the initiation of treatment and long-term adherence to antiretroviral therapy and TB treatment (Crush et al., 2011). Escalating food prices exacerbate this challenge, as it has led to poor adherence to treatment, resulting in increased defaulter rates (FAO/WFP, 2015).

Most people who have HIV/AIDS are prone to suffer from malnutrition due to a shortage of food. The treatment of patients is less effective where nutrition is inadequate (NFSPS, 2005). These nutritional deficits make people with HIV/AIDS more susceptible to disease and infection due to their weakened immune system (Masuku & Sithole, 2009). To address this challenge, the WFP partnered with other organisations to focus on nutritional intervention targeting people living with

HIV/AIDS, orphans, and vulnerable children, especially in food insecure areas such as the Lubombo region (WFP, 2017).

HIV/AIDS has a significant impact on food security in the rural areas of Swaziland. Swaziland falls under the countries most affected by the HIV/AIDS pandemic in SAA (Mamba & Peter, 2016). The most affected are individuals aged between 15 and 49 years, which involve about 47% of the reported HIV/AIDS cases. As mentioned previously, this results in what is usually the most affected group of society being less able to engage in productive activities (Mamba & Peter, 2016). This presents challenges for communities who are already vulnerable and have to cope with the additional consequences of an increase in orphans and vulnerable children (roughly 80 000).

The HIV/AIDS pandemic continues to be a hindrance to economic and social progress in Swaziland (E VAC, 2020; Nkondze et al., 2013; World Vision, 2010), where about 15% of households in the country are child-headed (WFP, 2009). To support these children, the WFP had initiated several neighbour care points across the country where children receive two meals per day. Neighbourhood care points help to address the food security needs of orphans and vulnerable children. Furthermore, the government has introduced school kitchens in all public schools to improve enrolment, performance and nutrition (Dlamini, 2014).

The prevalence of HIV/AIDS and related diseases increasingly affect food security and reduce households' ability to mobilise resources to access food. This is subsequent to the loss of family members capable of food production and has limited the household's source of knowledge and skills in farming. As a result, current Swazi Nation Land farming systems are, to an extent, neither sustainable nor feasible to produce enough food (NFSPS, 2005; WFP, 2015).

In addition, the HIV/AIDS pandemic has automatically rolled back many of the social development achievements attained by Swaziland in the past towards production of

food, as well as a delay in development planning and implementation (Swazi VAC, 2019). Many of the future developments have been delayed as resources were allocated to fight against the pandemic. It had catastrophic effects, economically and socially, and presented a major obstacle to the socio-economic development of Swaziland (SEPARC, 2017; World Vision, 2010). The government services have been failing to meet the demands for providing enough health care drugs as well as enough personnel (Mamba & Peter, 2016).

In regions heavily affected by HIV/AIDS, families have to opt for alternative sources of food production and cash-generation to maintain their food security (Bicego et al., 2013). In Swaziland, culture, deep-rooted values, and norms allow unequal power relations between men and women, resulting in the higher vulnerability of women to HIV/AIDS (Nkondze et al., 2013). Reported HIV/AIDS cases are high among women as they are affected by poverty, a lack of employment opportunities and consequent poverty (FAO/WFP, 2015). As a coping strategy, women often resort to less desirable behaviour, such as prostitution, which exposes them to the risk of HIV/AIDS infection as they seek alternative ways of generating income (Hengsdijk & De Boer, 2017). For this reason, job creation opportunities and improving food security of rural households should be emphasised as a possible strategy to fight HIV/AIDS in developing countries. In addition, empowering women with skills and resources can enable women to start income-generating projects (Gibson, 2016).

The Central Bank of Swaziland (2017) mentioned that at a social level, food insecurity is a significant cause of vulnerability to HIV/AIDS, and the impact is felt in reduced agricultural production (Masuku & Sithole, 2009). Subsistence farming is the main contributor of food sources in the rural areas of Swaziland. The majority of Swaziland's population live in rural areas, and roughly 70% depend on subsistence farming as a major source of food and income (Masuku et al., 2015). Many of the farming households are not able to produce food due to the loss of productive family members as a result of HIV/AIDS. Consequently, the impact of HIV/AIDS and related sicknesses

on agriculture are severe (FAO/WFP, 2015). A decrease in yields, changes in cropping patterns, conversion of labour to care for the sick, increased health costs and loss of regular remittances are experienced and are all contributing to the elevated levels of poverty in Swaziland, affecting food security (Mamba & Peter, 2016).

The reduction of agricultural productivity is a cause of concern which needs substantial attention (UN Economic Commission for Africa, 2016; WFP, 2017). In Swaziland, the high prevalence of HIV/AIDS has caused a decline in subsistence agricultural production, reduced investment in farming and less time dedicated to farming (FAO, 2017; Masuku & Sithole, 2009). The subsistence farming practices in Swaziland, which is dependent on rain, needs to be revised to improve food security.

In addition, there are economic costs associated with HIV/AIDS, particularly in terms of low productivity which is measured by staff absenteeism (WFP, 2015). In addition to low performance and job absenteeism caused by poor nutrition, The New Humanitarian (2009) reported the results of an IMF annual assessment survey showing that the HIV/AIDS epidemic was responsible for 25% of job absenteeism at the workplace in Swaziland. Job absenteeism and lack of employment among HIV/AIDS patients have been shown to decrease their access to food, money for treatment, health care and nutrition

### **2.4.3 Education, unemployment, and poverty**

#### **2.4.3.1 Education**

Education is one of the crucial factors that can help to achieve food security. The majority of people who are food insecure are uneducated or illiterate (FAO, 2017). Most people who earn a low income are those who could not access education which has led to low purchasing power (Gibson, 2016). Education enables people to access better-paying jobs that will help them afford food and other necessities. The delivery of education in Swaziland is faced with multiple challenges. Only approximately 29%



of children aged between three and five years attend early childhood care, due to its expensive nature, while a further 15% drop out due to lack of finances (Tevera et al., 2012; WFP, 2020).

Swazi VAC (2006) stated that schooling has not been made compulsory. However, Swaziland only provides free primary education which is not offered to students at the secondary school level (SEPARC, 2017). Parents are responsible for secondary school fees, although the Swazi government partly subsidises fees for vulnerable students. This is a challenge for some parents, as many cannot afford to pay the remainder of the non-subsidised fees (Swazi VAC, 2006). There is also a lack of scholarships at university level as government scholarships do not accommodate every student who qualifies for university studies (SEPARC, 2017).

The outcome is that many children are not educated at all, and young girls often join their parents in small enterprises such as selling food produce for income-generation (Mamba & Peter, 2016). Consequently, most of these children are low-wage employees in their adulthood (SEPARC, 2017). This has a subsequent effect on food security, as up to 80% of people's income is spent on food in low-income countries such as Swaziland. This does not leave sufficient funds for other necessities such as education and health care (Gibson, 2016).

#### **2.4.3.2 Unemployment and poverty**

The lack of adequate employment opportunities is one of the leading developmental challenges facing Swaziland (Khumalo, 2014). During the period between 2007 and 2017, the unemployment rate in Swaziland was estimated to be 54.2% (WFP, 2020). The closure of major manufacturing companies in urban areas and retrenchments from South African mines are the main factors contributing to the unemployment, as many people from rural Swaziland used to work as migrant labours in the mines in South Africa (Swazi VAC, 2017).

The agricultural census of Swazi VAC (2017) indicated that 75% of households rely on employment as a source of income, while only 12% of the income is derived from agricultural activities. Thus, with poor economic performance, the households relying on employment will be impacted negatively. In addition, agricultural production has declined, exacerbating the situation, and leading to many households being dependent on food aid (FAO, 2017).

The poorest households are those rural households involved in non-commercial farming (UN, 2017) followed by households being self-employed. The rise in the unemployment rate, together with the increasing size of the labour force, is caused by the inability of the Swaziland economy to generate new and enough jobs at the necessary rate (Khumalo, 2014). The creation of job opportunities will assist individuals in attaining their status and feeling of being part of society. No sustainable development can occur unless people have productive jobs which will enable them to have enough food to be food secure (FAO/WFP, 2015).

The Shiselweni and Lubombo regions are the most vulnerable regions where hunger and poverty are at a peak as a result of unemployment (International Labour Organization, 2010). A survey by E VAC (2020) reported that 48% of those who were working were involved in the informal economy, of which 89% engaged themselves in informal trading activities. These activities include selling goods at markets or on sidewalks, selling second-hand clothing and handicrafts, or running a small business such as saloons and cross-border trading (Mhlanga-Ndlovu & Nhamo, 2017).

Agriculture is the primary source of employment to the disadvantaged, which have declined due to the prevailing droughts (FAO/WFP, 2015; Swazi VAC, 2017), worsening the situation of unemployment in Swaziland. The subsequent higher food prices have affected the lower income group rendering them food insecure (FAO/WFP, 2015).

Programmes and interventions aimed at lowering unemployment could significantly increase vulnerable families' access to food (Vella, 2012). Policies aimed at addressing

unemployment and other macro-economic challenges in Swaziland, in the light of tropical micro-economic problems to circumvent the fiscal crisis, could be an addition to these programmes. The Swaziland authorities did, however, solicit the assistance of the IMF to assist with some challenges accompanying the fiscal crisis (Dwivedi, 2005), although it did not solve the problem entirely (Swazi VAC, 2017).

There is a distinct income inequality in the Kingdom of Swaziland (Powel et al., 2018). Addressing this inequality can enhance long-term growth through several channels and reduce the income gap between the rich and poor. Hengsdijk and De Boer (2017) further believed that addressing inequality can enable the poor to accumulate productive assets and invest in human capital, which increases their purchasing power. The structure of domestic demand for higher quality goods and services will therefore benefit, as well as ensure social cohesion and political stability. To address the inequality in the country, the government of Swaziland implemented the Poverty Reduction Strategy and Action Plan through the Ministry of Economic Planning and Development (Nindi & Odhiambo, 2015). The primary aim was to reduce poverty, although the weak economic prospects, poverty, and inequality were expected to remain a critical challenge (World Bank, 2016).

Gollin et al. (2004) were of the opinion that income distribution is a concern of policymakers which government policies can formulate and change income distribution to some degree through taxes, transfers, public sector employment and other policy instruments. Income is a determinant of calorie intake, and food quality and economic growth enhance nutrition and growth (Mazzochi et al., 2012). Access to income improves nutritional outcomes; thus, malnutrition cases are reduced. In addition, food security is improved.

The Swaziland Lilangeni (SZL) currency has gradually declined in value against the US dollar (US\$) since 2014 (Johansen & Juselius, 2017). The Central Bank of Swaziland (2017) also indicated that the local currency depreciated substantially. The

depreciation of the currency was mainly due to the effects of the US quantitative easing programme, the effects of pandemic diseases and the weakening of the South African economy, particularly in the mining industry as a result of uncondusive labour conditions as well as a drop in commodity prices (Mazuba, 2019). Moreover, inflation rates were mainly from increases in the prices of essential commodities such as food, housing and utilities, transport, and other amenities (United Nations Development Programme, 2010). Jerven (2009) described the poverty situation as lack of pro-growth institutions which emanated either under the colonial system or during the period of slavery or as a result of special geographical features of population characteristics.

Nindi and Odhiambo (2015) highlighted that the extent to which economic growth results in a reduction in poverty in a particular country is dependent on initial income distribution in the country, and how it progresses as the economy grows. If income is not well distributed, growth worsens, which increases poverty (Odhiambo, 2009). Thus the higher the income inequality in an economy, the less poverty will be reduced (Okoroafor & Chinnweoke, 2013). A study conducted by McKay (2013) showed that income growth leads to a reduction in the incidence of urban and rural poverty. It enables the population to afford healthy food and other necessities.

The Kingdom of Swaziland's population still lives below the poverty line. Swaziland, as a lower middle-income country, has 70% of the population employed in subsistence agriculture with some jobs being seasonal (Kingdom of Swaziland, Central Statistical Office, 2010). Mining has declined in importance. In recent years, coal, gold, diamonds, and quarry stones are mined on small scale, employing only a few people. The iron ore mine was closed in 2014 (Nindi & Odhiambo, 2015). In 2015, Swaziland also lost its eligibility for benefits under the African Growth and Opportunity Act after failing to meet benchmarks relating to workers' rights, resulting in loss of its privilege (Kingdom of Swaziland, 2010). This loss resulted in a lot of employment loss, especially in the textile industries. Moreover, the people working in the textile industries earn a low

income, whereas it employs the majority of people. They, however, spend most of their income on food.

The IMF (year) predicted that Swaziland's economy will grow at a snail pace in 2017 due to drought, which was likely to affect Swaziland's income from agricultural exports (United Nations Development Programme, 2010). Swaziland's most exported crop is sugar, so if less sugar is exported, it has a negative effect on the economy. Due to failure by Swaziland to implement the recommendations of IMF, the civil servants had not seen salary increments for the past two years. This has affected the servants immensely as they are the people who support most in buying of agricultural products such as vegetables and other products, which also had an effect on the farmers. Food security of civil servants and farmers will continue to be affected unless a salary review is done.

#### **2.4.4 Infrastructure**

Swaziland has well-developed road links to South Africa and Mozambique, which eases the transport of export goods, especially to the seaport in Mozambique. However, poor roads in rural areas continue to limit access to the improved services in these areas (Swazi VAC, 2016; Vella, 2012). It contributes to higher food prices and makes access to food difficult. In some villages, the only access is gravel roads that affect the delivery of many services such as agriculture, education, health, technology, and communication (FAO, 2016). The poor roads in rural areas are a hindrance to food security as people from these areas cannot easily access food supplies (Kingdom of Swaziland, Ministry of Agriculture, 2016).

Access to fresh water is known to improve food security, yet access to improved water services in rural areas is limited due to a lack of the necessary infrastructure (Mhlanga-Ndlovu & Nhamo, 2017). Water is a basic need and a lubricant for the economy, so its shortage affects food security and disrupts economic activities, especially in the rural communities who depend on agriculture (SEPARC, 2017). Moreover, water shortages

have negative consequences on the health of humans and lead to an increased risk of spreading waterborne diseases such as cholera and typhoid (Swazi VAC, 2016).

Currently, in rural areas, the utilisation of improved and quality water sources is at 72% (Swazi VAC, 2017). The government attempted to aid in this regard, as they drilled 28 boreholes, mostly in the Lubombo and Shiselweni regions. However, it has not been enough as some areas are still affected by water shortage (FAO/WFP, 2015). Improvement of water supply could increase the production of food as that is the main hindrance for rural communities. The expansion of water infrastructure in rural communities in Swaziland is essential to improve national access to clean water which can help to improve food security (Swazi VAC, 2017).

#### **2.4.5 Coping strategies**

Coping strategies have become a norm in vulnerable households in the rural areas of Swaziland, leading to studies establishing the magnitude and extent of food insecurity in the rural areas (FAO/WFP, 2015; Shongwe et al., 2014; Swazi VAC, 2002). A study conducted by the Food and Agriculture Organization of the United Nations FAO (2015) established that a large proportion of household income is spent on food. Nationally, 52% of households spend 50% or more of their income on food (FAO/WFP, 2015; Nkonde et al., 2013). Gibson (2016) contended that a large amount of household income is spent on food, leaving very little for other necessities such as health care services and education.

Swazi VAC (2002) and the FAO (2016) pointed out that households use different coping strategies to manage food and money shortages. Among these strategies are selling chickens at roadsides, selling locally brewed beer, skipping meals and reducing the number of meals per day, relying on wild foods, making a decision to eat less expensive food, borrowing food from neighbours, reducing expenditure on health, making and selling handicrafts by roadsides, working for food and increased borrowing of food or

cash from others (Shongwe et al., 2014). Moreover, some households spend entire days without eating and gathering wild foods (FAO, 2015).

In areas that experience frequent food insecurity such as the Lubombo and Shiselweni regions, people have only a few assets as they had used most of their assets in exchange for food (Vella, 2012). Thus, medium- to long-term activities are needed to strengthen resilience and food security in Swaziland (Swazi VAC, 2016).

#### **2.4.6 Land issues**

Swaziland is a landlocked country situated between the Republic of South Africa and Mozambique. It is divided into four distinctive climatic/ecological regions, namely the Highveld, the Middleveld, the Lowveld and the Lubombo (Shongwe et al., 2014; Vella, 2012). Each of these ecological regions has a different climate with a significant impact on food production and the availability of food (Manyatsi & Mhazo, 2014). The Highveld is humid and has a suitable climate for growing maize, which is the staple food of the people of Swaziland. Both the Middleveld and the Lubombo ecological regions have almost similar climatic conditions that are subtropical. The Lowveld is the most vulnerable when it comes to food security. It is the hottest region with the lowest rainfall; as a consequence, the chances of agriculture and food production are very minimal (Shongwe et al., 2014).

The division of land in Swaziland happens in one of two categories, namely Title Deed Land and Swazi Nation Land. Sixty percent (60%) of the total land is overseen by the King in trust of the Swaziland nation and administered by chiefs. This land can be accessed through following a laid down procedure or system for acquiring, whereby a cow is paid to the chief upon receiving the piece of land. In contrast, the Title Deed Land is obtained by purchasing land from owners or municipalities. Purchasing or acquiring Title Deed Land are mostly applied in urban areas (IFAD, 2007). Most of the rural, semi-rural and semi-urban populations, including the most impoverished communities in Swaziland, live on Swazi Nation Land (Vella, 2012).

The limited availability of arable land prevents the production of food, which is necessary to improve the country's food situation. Some people cannot afford to purchase land, causing them to live in rented rooms where they are unable to produce their own food. Those without purchasing power, mostly rely on coping strategies to save the little food available. Moreover, the lack of purchasing power enables very few people to purchase farming inputs, which result in the country importing most of its food from South Africa (Vella, 2012). The government could consider making land and farming inputs available to vulnerable households in order to produce their own food that will sustain them (E VAC, 2020).

#### **2.4.7 Population growth**

According to Hall et al. (2017), the main challenge facing society today is the provision of nutritious and naturally sustainable food to the population at all times. The challenge is acute where the population growth is rapidly increasing, leading to food insecurity and extensive undernourishment. It is predicted that global food production needs to increase with 70% to match provision with population growth (Gibson, 2016; FAO, 2017; Quested et al., 2020). Estimations suggested that the Swazi population is expected to grow to 1.4 million people by 2025 (Nkondze et al., 2013). This is an increase of 200 000 individuals in less desirable circumstances. Such a population growth, increases the demand for food and make it difficult to eradicate poverty, malnutrition, and hunger (Hall et al., 2017). The projected increase in population and a decrease in food production is likely to worsen food insecurity, especially in the rural areas of Swaziland (FAO, 2017).

### **2.5 Food security in the Lubombo region**

Swaziland is divided into four agro-ecological zones, namely the Hhohho, Manzini, Lubombo and Shiselweni regions. Each of these regions has a characteristic climate,



rainfall, and geography (Mabuza et al., 2015; Masararimbi et al., 2010). The map in Figure 2.2 shows where Swaziland is situated in the map of South Africa.



Source: Ezilon Maps (2020)

**Figure 2.2: Map of Swaziland**

The Lubombo region is an eroded cuesta (titled plateau) with a steep escarpment on the western side and gradual dip slope (Kingdom of Swaziland, 2010). The driest zone in Swaziland is the most semi-arid zone, found in the southern parts of Lubombo. An intermediate dry, sub-humid climate characterises the northern parts of Lubombo. The most humid part of the dry lands is the dry sub humid zone, covering the lower

Manzini, most of the Lubombo and a small part of the upper Manzini (Mavuso et al., 2015).

The Lubombo region has the highest percentage of households with poor food consumption and higher levels of negative coping strategies. The area is faced with longer-lasting shocks than usual due to continuous drought spells and rain shortages, leading to crop failure (Kingdom of Swaziland, 2016). Rural communities are most dependant on rain due to lack of rivers and dams in the region. The shocks affect households in different ways, depending on household consumption and their level of vulnerability (Swazi VAC, 2016). Some households can afford two meals a day, some only one meal a day, while others cannot even afford a single meal unless food is donated. The Lubombo region also recorded the highest percentage (39%) of households using emergency coping strategies due to shortage of food (Swazi VAC, 2017).

The FAO/WFP (2015) stated that due to exposure to dry spells, food security in the Lubombo region is profoundly affected. This causes vulnerable households to adopt coping strategies which involve eating less preferred foods, limiting portions, and reducing the number of meals per day (Mabuza et al., 2015). The Swazi VAC (2017) indicated that the Coping Strategy Index for the Lubombo region was the highest compared to other areas. The results suggested that households in the Lubombo region have been faced with higher food insecurity and shocks, causing them to engage in coping strategies. A projection by Swazi VAC (2016) indicated that a worsening situation would continue for several rural people facing poor livelihoods and shortage of food in the Lubombo and Shiselweni regions. This further highlighted that the Lubombo region is the region with the highest number of people using negative coping strategies. This has caused the majority of the people to be vulnerable. A survey done by Swazi VAC (2002) reported that there is a cereal deficit per household. Shortage of cereal is one indication of a shortage of food as the main part of a meal, as carbohydrates are being served more than the accompaniments, protein

and vitamins. Furthermore, Swazi VAC (2002) reported that importing food causes an added burden to the poor and very poor, exacerbating their situation, which has led to food insecurity in the region.

Data from Swazi VAC (2006) indicated that there are many factors affecting food production in the Lubombo region, which includes that 89% of the people has access to land, fertiliser, and pesticides. Still, its usage is very low in the region due to lack of income. Due to the main crop grown (maize) having been destroyed by recurring droughts, households in the Lubombo region are likely to be vulnerable. Agricultural programmes could benefit many households in the region and if households could receive proper training, they could be able to produce their own food.

The household livelihood vulnerability baseline conducted by Mhlanga-Ndlovu and Nhamo (2017) showed that the effects of droughts in the Lubombo region were worse compared to the other regions due to climate change. There has been a considerable decline in crop production levels and diversity in the country economy as it depends highly on agriculture. When the economy of a country is also affected, food security is affected. Mavuso et al. (2015) mentioned that the Lubombo region accounts for 30% of the total number of poor and vulnerable people in Swaziland.

Since the Lubombo region is the worst affected region, with vulnerable and food insecure households, strategies need to be put in place to ensure that these vulnerable households are not exposed to external shocks. Coping strategies do not make households to be food secure but instead to remain exposed to external shocks. Vulnerable groups should be supported to maintain their resources and productive activities and should have access to resources to improve food security (Swazi VAC, 2017). Support on these aspects will help most households to be self-sustainable.

### **2.5.1 Food insecurity and vulnerability**

Shongwe et al. (2014) defined vulnerability as the degree to which exposure is susceptible to be harmed by stress, in conjunction with its ability to cope, recover and adapt. Droughts are always a threat to food security in developing countries such as Swaziland, and causes food shortages that result in malnutrition and famine (SEPARC, 2017). Once a person is affected by malnutrition, food production is affected, which affects food security. The large number of people dependent on the rural economy makes drought risks a significant contributing factor to food security in the country (IFAD, 2013). Once the people in the rural communities are affected by drought, the production of crops is also reduced; as a result, they are unable to sell anything to earn an income. Lack of income also affects food security.

FANRPAN (2011) highlighted that most of the rural households cannot adapt to the negative impacts of external shocks. Moreover, the policy response is limited, while interventions do not meet their needs. Vulnerability can be caused by a wide range of political, institutional, economic, environmental and sociocultural factors such as insufficient knowledge, organisational gaps, shortage of personal and financial resources and inadequate legislation (Abate, 2009). Addressing these causes can improve food security. In addition, Gregory et al. (2005) mentioned that factors that contribute to vulnerability include rapid population growth, poverty and hunger, poor health, low levels of education, gender inequality, fragile and hazardous locations, and lack of access to resources and services. All these factors should be addressed, so that food security is improved in the rural areas of Swaziland.

Several factors can influence a household's vulnerability which can result in external shocks (Masuku & Sithole, 2009). This can include economical and climate shocks which all affect food security immensely. Nkondze et al. (2013) mentioned that 77% of the Swaziland population reside in rural areas and mostly depend on rain-fed agriculture and livestock herding for their livelihoods. In this region, a poverty level of

69% is prevalent, which make these people vulnerable to different types of shocks, such as diseases and climate change.

Swaziland has been unable to produce sufficient food to sustain domestic requirements, contributing to food insecurity of an estimated 25% of the population (WFP, 2014). The vulnerable are the largest buyers of food and therefore are vulnerable to food price shocks (Musinga, 2010). Swaziland suffers from poor links to the value chain and to markets where produce can be sold (FAO, 2015). Rural roads are not well maintained for easy access to markets which cause them to be centralised, resulting in higher prices they cannot afford (FANRPAN, 2011). Drought persistence in the country and access to food remains a challenge for much of the population, especially in the Lubombo region (Nindi & Odhiambo, 2015).

Swaziland is faced with many challenges that had a significant bearing on the vulnerability of the Swaziland population (Swazi VAC, 2017). The recurring drought yearly up to 2020, which was considered to be the worst in 35 years, significantly affected the ability of several households to produce their own food (WFP, 2014). Masarirambi et al (2010) stated that the Lubombo region accounts for 30% of the total number of the poor and vulnerable people in Swaziland. Vulnerability is the inability to withstand the several impacts of exposure to stress or shocks associated with environmental and social change, and also the absence of the capacity to adapt to the impact. Stress refers to unanticipated changes and disturbance to livelihoods (Nkondze et al., 2013).

Zaehring et al. (2018) stated that several factors influence vulnerability, including swift population growth, poverty, poor health, low levels of education, gender inequality, fragile and hazardous locations, lack of access to resources and services, including knowledge and technological means. Nkondze et al. (2013) further reported that other causes of vulnerability include lack of access to information and knowledge, lack of public awareness, limited access to political power and representation. When

people lack a political voice, their vulnerability is further exacerbated. Lack of knowledge can cause people not to purchase nutritious food, even when they have enough resources. They might opt for other necessities which affect their nutritional status.

Household food insecurity in Swaziland has severely impacted health and growth in children and development in adults. This leads to more hospitalisation cases, poor health, and deficiency of iron, developmental risks, and behavioural problems (Kingdom of Swaziland, Ministry of Agriculture, 2016). Acute malnutrition and morbidity is high in the Lubombo region and low in the Shiselweni region compared to the other regions of Swaziland (Swazi VAC, 2016). Food insecurity and vulnerability is associated with poor nutritional status as well as social disorders (Hadley et al., 2014). There is evidence that supports a link between food insecurity and the high risk of sexual behaviour among women (Masuku & Sithole, 2009). Most unemployed women have resorted to prostitution to earn a living, which has exposed them to sexually transmitted diseases.

Moreover, Rose (2008) stated that there is a link between household food insecurity and school enrolment, attendance, and achievement. Some children do not attend school because of a shortage of food at home and school. Instead, they would rather start begging for food, mostly in urban areas. The support of international and local organisations, and countries in the Southern African Development Community has since 2006 assisted in conducting annual vulnerability assessments to evaluate the state of livelihood food security and vulnerability in rural households. It has helped to collect data of people who are living under the poverty line in the rural areas of the Southern African Development Community countries. One indicator of malnutrition in children under five is muscle wasting. Recent statistics indicate that 39% of children under five years have poor growth, and this has an effect on the goal of reducing infant mortality (Swazi VAC, 2017). If the growth of children is stunted, it means brain

development is affected as well; thus, school performance is also affected. A shortage of food usually causes stunted growth (Powel et al., 2015).

Despite the absence of an ideal indicator of food security, many authors suggested that important information can be drawn from strategies employed by food insecure households and used as an indirect and relatively cheaper measure of food security through the computation of a Coping Strategy Index (Ingram, 2011; Mabuza et al., 2015; Masarirambi et al., 2010). This can help to identify food insecure households which need help to improve their food security. These authors further highlighted that the Coping Strategy Index remains different and more beneficial in that it also studies the behaviour of households if they run short of food or money to buy food. Household food security status is determined by three components, namely food intake based on dietary diversity and food frequency; food access based on markets and the share of food expenditure; reliability and sustainability strategies derived from the frequency and severity of different coping strategies (Swazi VAC, 2017). Coping strategies become severe when they need to be applied daily without a choice.

High food prices are affecting the purchasing power of households across the Lubombo region (Kingdom of Swaziland, Ministry of Agriculture, 2016). Prices of food have gone up in a way that most households are unable to afford food for their livelihood. The Swazi VAC (2016) highlighted that the number of food insecure people has been growing in SSA countries. The FAO/WFP (2015) highlighted that food insecurity is always increasing across Swaziland compared to previous years which worsens the situation. This indicates the continuing vulnerability of Swaziland to shocks influenced by the weather. Data from Swazi VAC (2017) showed that a high proportion of households is food insecure, with limited consumption of nutritious foods, especially in the Lubombo and Shiselweni regions. If nutrient dense foods is not consumed at all times, that is an indicator of food insecurity. These are regions that are faced with high food insecurity levels; thus, households have poor access to a variety of nutrient-rich foods to meet their dietary needs.

Moreover, the FAO/WFP (2015) stated that Lubombo is rated at 11.3% of households falling under the poor food consumption category. Households that are faced with food insecurity shocks engage in increased coping strategies to cope with the shock (SEPARC, 2017). The coping strategies are a temporary measure which do not solve the problem of food insecurity.

Most vulnerable households own small houses made of sticks and mud; those that are made out of concrete bricks are not plastered and consist of a few rooms, i.e. two rooms or one. They do not have electricity. Moreover, they are without a source of water in their homes and mostly rely on neighbours who have water sources. Furthermore, they do not have good access roads to their homes.

Shortage of income is a well-known determinant of calorie and dietary quality in a household (Mazocchi et al., 2012). Income changes the dietary quality and nutritional outcome of a household, as a shortage can lead to malnutrition. In some cases, household's asset base was destroyed by drought, which led to a lack of income, as they would sell their livestock for income. They did not have an income source since they were not working. Some were doing low-paying jobs such as security at nearby schools, school cooks, nannies, cleaners, and nursing mothers nearby the SOS Children's Village. They have no purchasing power for farm inputs and to buy food which sustains them throughout the month. Shortage of income makes a household not being able to pay their water bills. The Lubombo region has a shortage of water supply, so they get water from the Swaziland Water Services Corporation that requires them to pay their bills monthly.

The number of children in a household affects food security in a household as the more children in a household, the more food is needed. The majority of the households do not grow crops as a result of the drought and shortage of farm inputs. Due to the low sources of income, children from vulnerable households are unable to complete school as the government of Swaziland only pays school fees at primary level. This



results in children dropping out of school at high school level, thereby increase the number of vulnerable children because of teenage pregnancies.

## **2.6 Food habits and taboos in Swaziland**

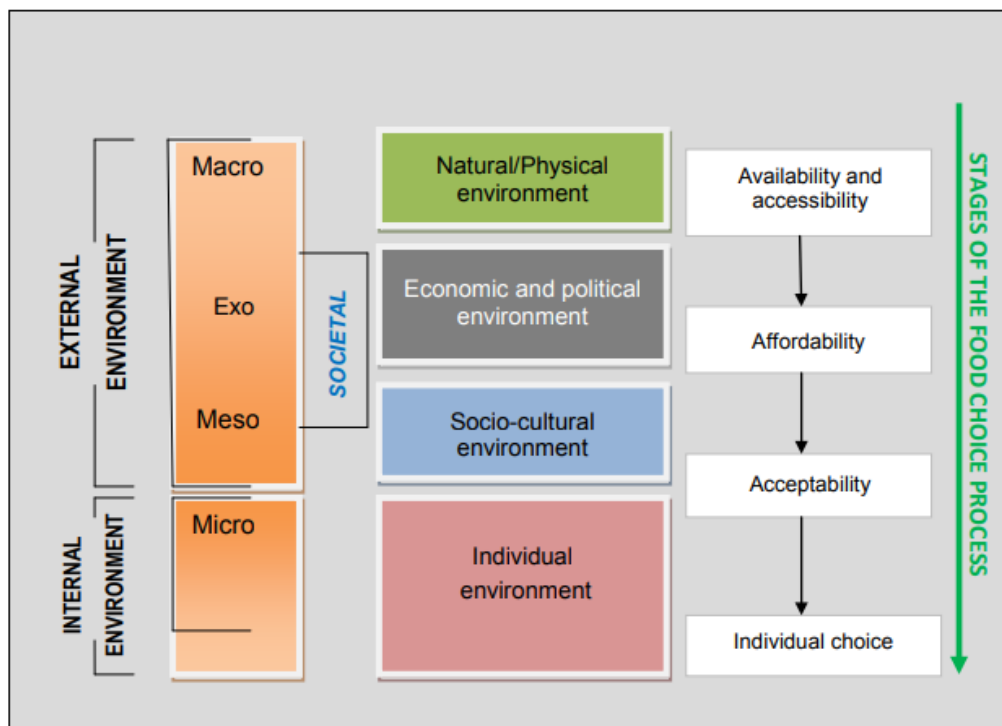
The traditional Swazi culture has many food taboos and habits that people are expected to conform to as citizens of Swaziland. Food habits are defined as the means which individuals or groups select, consume, and use portions of the available food supply in response to social and cultural pressures (Tull, 2012). Food habits develop and are maintained because they are effective, practical, and meaningful behaviours in every culture (Viljoen, 2009). Food habits are complex and diverse, depending on a particular country. Viljoen (2009) believed that internal and external environmental factors have an impact on food habits. Eating habits are thus the result of both external factors such as politics and internal factors such as values. These habits are set up and might be altered during a person's life (Kgaphola & Viljoen, 2000).

It is often believed that food habits rarely or never change; however, the opposite is true, as in many countries the current staple foods are not similar as those eaten years ago (Faskotti & Cesarani, 2012; Gibson, 2016). The main reason for these changing diets is globalisation, the advancement of processing, storage, and transport facilities as well as communication (Gibson, 2016). Other food practices are governed by taboos which are followed by the national group as a whole or tribe in a society (Van Wyk et al., 2011). Within the community, several food customs may be practised by a specific age group or gender, or it may be linked with an occupation (Brown, 2004).

### **2.6.1 Factors influencing food habits**

The model presented by Viljoen (2009) demonstrate the environmental levels and how they add to food habits in different cultures, namely the external and internal environments. The external environment consists of the natural environment, economic, political as well as the sociocultural environment, whereas the internal

environment consists of the individual environment (Viljoen, 2009) as depicted in Figure 2.3.



Source: Viljoen (2009)

**Figure 2.3: The choice process**

### 2.6.1.1 External environment

#### ☐ Natural/Physical environment

The natural environment includes plants, animals, and geographic features of a place where humans live (Kgaphola & Viljoen, 2000). Physical factors may refer to the climate, soil, and water available that influences the growth of plants and animals (Manana, 2014). Furthermore, the physical environment may include an environment where food is produced and distributed (Viljoen, 2009). The natural environment influences food habits which are evident in the case of Swaziland, where maize is a staple food. The primary reason is conducive climatic conditions for maize growth and geographic features that favour the cultivation of maize (Dlamini, 2014).

### ❑ **Economic and political environment**

Food laws and trade agreements affect what is available within and across countries, and also influences food prices, income and marketing of goods, and consumer demands. Economy, money, food values, and consumer skills all influence what a consumer purchases (Ville et al., 2019). The price of food, however, is not an indicator of its nutritional value, but food choice may directly be determined by household income and food. The political system has a structure such as government, legislation, and policies that benchmark the selling of food (Kgaphola & Viljoen, 2000).

### ❑ **Sociocultural environment**

Members of a social group depend on the behaviours and values of each other in the group (Abbots & Lavis, 2016). A person's membership in a group, either a peer group, work, or community groups, influences food behaviours. However, the cultural environment works as guidelines for acceptable foods, food combinations, eating patterns and eating behaviours (Tukan et al., 2011). Adhering to these guidelines gives a sense of identity and belonging to an individual. Culture influences food habits by dictating what is or what is not acceptable to eat (Brown, 2004).

#### **2.6.1.2 Internal environment**

The internal environment may include personal preferences that develop over time and are influenced by individual experiences such as knowledge, attitudes, customs and rituals, and personal values (Viljoen, 2011).

### ❑ **Knowledge**

Knowledge is described as information or understanding that is gained through education or experience about something (Brown, 2004). Knowledge can cause an individual to make changes concerning food consumption and select appropriate food for that specific situation (Foskett & Ceserani, 2007). Knowledge plays a role when an individual needs to make sound choices. Without knowledge, it is difficult to make

wise food choices. Thus, food habits are part of the culture as knowledge is acquired over a period of time through socialisation (Brown, 2004).

### ❑ **Attitudes**

Attitudes are defined as beliefs around an object such as food, as every individual has distinctive likes and dislikes concerning food (Foskett & Ceserani, 2007). Attitudes can be a foundation of food habits for an individual. A person with a favourable attitude towards a particular food will be more likely to consume that food (Manana, 2014).

### ❑ **Beliefs**

Belief is described as a feeling of self-assurance arising from a person's appreciation of food quality (Tull, 2012). The attitudes and values of an individual can influence food beliefs. Food belief can be associated with health, age, as well as the social needs of an individual (Brown, 2004). Some individuals decide to eat or avoid certain foods according to their religious beliefs (Foskett & Ceserani, 2007). In Swaziland, families with specific surnames avoid certain foods, for example, if a person's surname is Matsenjwa, they would not eat goat, and likewise Lukhele's do not eat fish (Dube & Musi, 2002). In addition, most religions proclaim certain food items fit and others unfit for human consumption, which may govern particular phases of the human life cycle such as menstrual periods, pregnancy, childbirth, and lactation (Meyer-Rochow, 2009).

### ❑ **Values**

Klimis-Zacas (2001) defined values as "enduring beliefs centrally located within one's total belief system". Values help to determine individual behaviour and are acquired during childhood and adolescence through socialisation (Van Wyk et al., 2011). Most individuals share values of their cultural group, religious community, socio-economic group, and family (Foskett & Ceserani, 2007). However, some people hold values which differ from those of their families, peer groups, and even cultural groups. Values have

a strong influence on food choices, and they are visible in people's daily lives (Van Wyk et al., 2011).

### **2.6.2 Food taboos in Swaziland**

Tull (2012) defined taboos as behaviours or social custom prohibiting the eating of particular food. Food taboos are found in one form or another in every society on earth, for no person, tribe, or ethnic group consume all edible foods found in their surroundings (Meyer-Rochow, 2009). Food taboos are mostly considered to have an ecological background which may have led to full utilisation of resources and its protection (Tull, 2012). Food taboos and food habits can continue for centuries and can be used for identifying cultural and historical relationships between human populations (Meyer-Rochow, 2009).

Swazi traditional culture has many taboos and habits that prohibit people from eating certain foods according to age, gender, and clan (Dube & Musi, 2002). They are associated with danger and death (Niehaus, 2013). It is believed that taking unfit food can be the cause of an undesired event in your life. An example includes the young wife in a family that is forbidden to eat foods such as eggs, milk, chicken, and various types of high protein foods as they are traditionally reserved for her husband as well as other men in the household (Dube & Musi, 2002). Also, Kgaphola and Viljoen (2000) highlighted that women and young girls are prohibited from eating eggs as it is believed they would lust after men. Such a tradition is unfortunate because these restrictions can prevent a young bride and pregnant mother from receiving the necessary proteins which are essential for growth, repair, and maintenance of their health.

The women are emancipated from this taboo usually long after they have passed childbearing age and when the issue of good nourishment is no longer of great importance (Dlamini, 2014). The Swazi people typically observed fish as a taboo as it was closely related to snakes (Kgaphola & Viljoen, 2000). However, this taboo is

generally not strictly observed because canned fish is used as a side dish in meals and fresh fish is commonly used in meals.

In addition, Dube and Musi (2002) stated that there are also clan-specific food taboos, in particular birds, wild animals, fish, and domesticated animals. Generally, fresh produce is not eaten by the nation before the *incwala* ceremony, but they can eat other foods except the fresh foods. After this ceremony, the nation is free to eat fresh produce from the fields such as mealies, pumpkin leaves, and other produce. As a result of technology and food shortages, this taboo is no longer observed as maize is now available throughout the year (Mavuso et al., 2015).

Many Swazi food habits and taboos have changed, as a direct result of the change in the physical environment and poor availability of wild and indigenous foods. This originates from the resettlement programmes of two decades ago that most communities in Swaziland were subjected to (Kgaphola & Viljoen, 2000). This has caused the young generation not to know the wild foods like *inkaka*, *sibhadze*, *umdzayi* and *ematabhane* which were previously used in Swaziland.

### **2.6.3 Food habits and traditional food of the Swazi people**

Culture is described as a complex whole that encompasses knowledge, beliefs, art, morals, law, customs, and habits acquired by members of society (Foskett & Ceserani, 2007). Food habits developed and are maintained because they are effective, practical and meaningful behaviours in a particular culture (Kgaphola & Viljoen, 2000). Culture influenced the food habits of the Swazi people (Viljoen, 2009). The traditional diet of Swaziland is influenced by the environment (Masarirambi et al., 2010). The foods that were traditionally cultivated depend on the geographical regions of Swaziland, namely Hhohho, Manzini, Lubombo and Shiselweni (Dube & Musi, 2002). Furthermore, a shortage of technological developments also reduced the self-sufficiency of the people, as access to imported food increased (Manana, 2014). Moreover, traditional methods of obtaining food, such as hunting, are now prohibited by law (Viljoen, 2009).

The traditional food supply increases seasonally between winter and summer, where new crops become available (Klimis-Zacas, 2001). Cereals such as maize, sorghum, and millet were the main staple foods of the Swazi people (Kgaphola & Viljoen, 2000). Dairy products, especially sour milk, were a main source of proteins, although reserved for children, whereas leafy vegetables, roots like sweet potatoes, and fruits completed the traditional diet of the Swazi people (Viljoen, 2009). Fresh mealies, sweet potatoes, pumpkins, green vegetables, legumes, and wild fruits are plentiful from January to March, where there is plenty of rainfall (Dlamini, 2014).

The introduction of shop outlets made meat and other products available throughout the year (Masarirambi et al., 2010). In the rural areas of Swaziland, technological progress in terms of food processing, transport and storage are not readily available. Consequently, the traditional diet is greatly influenced by the natural environment and cultivation patterns practised in an area (Masarirambi et al., 2010), resulting in individuals relying on crops grown naturally in that area. However, in areas where technology is advanced, individuals enjoy crops that have been produced with the assistance of technology, for example, maize that takes a shorter time to reach maturity.

### **2.6.3.1 Cultivation**

In all four regions of Swaziland, food are prepared from domesticated crops ranging from cereals, legumes, and vegetables, which can be used for food and medicinal purposes (Kgaphola & Viljoen, 2000).

#### **□ Cereals**

The most important cereals include sorghum, *Adropogon* sorghum, millet, *Penrussetum specutum* and maize, *Zea mays* (Kgaphola & Viljoen, 2000). These are often used for porridge mixed with sour milk (*kuvuba*) as well as for traditional brew (*umcombotsi*). Apart from these, bread forms the most important part of the Swazi diet (Manana, 2014). The bread was usually made out of fresh corn (*sinkhwa sembila*).

## ❑ Nuts and seeds

A wide variety of legumes are grown, which include nuts, mungo beans, jingo beans, cowpeas, and sesame seeds (Manana, 2014). It is stored in granaries, bags, or baskets in food huts for future use (Kgaphola & Viljoen, 2000). Legumes are mostly used as a relish, combined with cereals, and added to vegetables, such as pumpkin leaves with grounded peanuts (Dube & Musi, 2002). They are the main source of proteins, especially low biological value proteins.

## ❑ Vegetables

Green vegetables form a vital part of the traditional Swazi diet and are used as an accompaniment or a relish to maize cereal (Masarirambi et al., 2010). These include cultivated and uncultivated vegetables (Viljoen, 2009). The cultivated vegetables include a choice of cucurbits such as for pumpkins, melons, and gourds, which are grown among maize (Kgaphola & Viljoen, 2000). Moreover, sweet potatoes are grown by the Swazi people, and they use the leaves as vegetables (Dube & Musi, 2002). The extent to which vegetables are consumed in Swaziland varies geographically (Masarirambi et al., 2010). Indigenous vegetables are usually rich in Vitamin A and iron (Smith & Eyzaguirre, 2007). Traditional vegetables are harvested and dried to make dried vegetables (*umfuso*) for use when they are out of season and during a drought period (Masarirambi et al., 2010). As refrigerators are not common in rural areas, the most popular method of preservation is drying. Some traditional vegetables, such as *mormodica balsamina* (*inkhakha*) and *legenaria siceraria* (*inshubaba*), are used for hypertension and diabetes (Dube & Musi, 2002). This is thought to lower the level of chronic diseases in the body (Dlamini, 2014).

Table 2.1 provides a list of the most common indigenous vegetables found in Swaziland.



**Table 2.1: Common indigenous vegetables found in Swaziland**

Cultivated	Uncultivated	Botanical name
Pumpkin leaves	Imbuya	<i>Amaranthus spinosus</i>
Cowpeas leaves	Ligusha	<i>Corchorus oleratus</i>
<i>Emadumbe (colocasia antiquorum)</i>	Chuchuza	<i>Bidens pilosa</i>
Sweet potato leaves	Emahala	<i>Aloe saporiria</i>
	Emadvumbe	<i>Colocasia esculenta</i>
	Inkhakha	<i>Mormodica balsamina</i>
	Inshubaba	<i>Lagenaria siceraria</i>
	Mandwandwe	<i>Abelmoschus esculentus</i>
	Umbikilicane	<i>Chenopodium album</i>
	Silele	<i>Portulaca oleracea</i>
	Umsobo	<i>Solanum nigrum</i>

Source: Kgaphola and Viljoen( 2000); Masarirambi et al., (2010)

Cultivated vegetables are edible plants, namely leafy, stem, roots, tubers, and fruit vegetables are grown at home. In contrast, uncultivated vegetables are those plants that grow at its own in society, and they are edible (Aryal et al., 2009).

## 2.6.4 Eating patterns of the Swazi people

Swaziland's eating patterns were mostly influenced by forefathers' eating patterns. The people have very specific meal patterns, and the composition of their meals is as follows:

### 2.6.4.1 Meal patterns

Meal patterns are described as the number of meals eaten in a day (Tull, 2012). Swazi people follows a pattern of serving two meals per day that consist of stiff porridge served with a relish such as boiled chicken or sour milk which is served for both breakfast and supper (Viljoen, 2009). This meal pattern is still followed, although certain changes have been observed, oriented by Western patterns, which consists of three meals a day. A similar pattern has been observed in other African countries, besides Swaziland (Kgaphola & Viljoen, 2000).

#### **2.6.4.2 Meal composition**

There had been a considerable change in the composition of Swazi meals. In Swazi culture, everyone preferred sour milk which was served with sorghum for breakfast and crushed maize meal for supper. The eating habits have been influenced in such a way that the majority of households follows three meals a day, which includes modern foods like rice and salads (Kgaphola & Viljoen, 2000). Relish is cooked with wild vegetables or cultivated vegetables and are flavoured with nuts such as ground peanuts and served with cooked cereals (Dube & Musi, 2001). Furthermore, Masarirambi et al. (2010) stated that a midday meal consists of porridge and an accompaniment, whereas for supper, some families use leftover food from lunch or stiff porridge and relish. Due to modern influence, Sunday meals had been introduced to the meal patterns such as beef stew, boiled rice and lettuce salad.

#### **2.6.4.3 Snacking meals**

A snack is defined as a small meal eaten in between main meals (Tull, 2012). Snacking was popular, especially in summer where there was ample food such as sweet potatoes, *colocasia esculata* (*emadvumbe*), *manihoe Esculanta* (*umjumbula*), boiled mealies, boiled jugo beans, fruits, groundnuts, and fermented mealie meal beverage (*emahewu*) (Dube & Musi, 2002). -repetition. In addition, fruits could be brewed as an alcoholic beverage, for example marula brew (*buganu*). Some snack foods are made by combining maize and legumes, such as boiled maize and jugo beans (*sishwala*) (Dlamini, 2014).

In conclusion, the food habits and taboos of the Swazi population has changed due to many influences such as technology and education, resulting in many households considering a balanced meal for health reasons. This led to a consequential change in food composition and meal patterns. Indigenous crops are now ignored, although staple food such as maize still plays a vital role in the Swazi diet. In some parts of the country, certain taboos are still observed, although only by a minority of the

population. Swazi food habits can now be described as Western-influenced Swazi dietary patterns.

## **2.7 Conclusion**

Household food security is the ability of the household to have sufficient food to provide for all the nutrients required by all members of the household. Lack of food security can result in deficiency diseases, malnutrition and poor performance at work or school. Food security is thus important at all levels, international, national, household, and individual.

Achieving food security in its totality continues to be a challenge in Swaziland, as is the case in many SSA developing countries. Food aid is provided to alleviate this challenge, but it is not an effective long-term solution. When even the food is not adequate, households apply different coping strategies which do not improve food security. This is due to an insufficient resource base to sustain the coping strategies and interventions. Moreover, food access is hindered by economic factors, physical infrastructure, political and economic factors. Food security challenges in SSA are caused by climate change, conflicts and politics, economic crisis, increase in food prices, poor market access, handicapping policies as well as diseases and infections. To improve food security, a more strategic approach is necessary. Tackling the causes will result in new long-term approaches that will help to improve food security in SSA. Although Swaziland has food security policies, it is not followed to improve food security and therefore contributes to most households' food insecurity. As a result, several coping strategies are incorporated to achieve food security. These are short-term coping strategies because they do not sustain the vulnerable households for an extended period. It therefore became imperative for the formulation of long-term strategies to assist vulnerable households in attaining food security.

## Chapter 3

# METHODOLOGY

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### 3.1 Introduction

The importance of this chapter is to focus on the research approach and methodology utilised to carry out the research. The discussion includes the research design, population and sampling, data collection and measuring instruments, the data collection process, data analysis, validity and reliability, limitations of the study and ethical considerations.

### 3.2 Research design

This study followed a quantitative design and was exploratory and descriptive in nature. A quantitative design has several benefits for the researcher, as it is a systematic approach where numerical data obtained from a specific subgroup can be analysed while remaining objective (Maree, 2016). As this research was deductive, the design mentioned above made it possible for the researcher to investigate and quantify the objectives, as well as explore relationships between key concepts or variables (Khaldi, 2017).

An explorative and descriptive approach was followed. These designs are essential when a researcher is breaking new ground or investigating a novel research problem (Leedy & Ormrod, 2015). It assists a researcher in obtaining approximate answers to some questions on the topic of the study when it is relatively new (Khaldi, 2017). Researchers do exploratory studies to fulfil their interest and desire for a better understanding of a specific situation (Creswell et al., 2012). In this case, the researcher aimed to understand more about food security in the vulnerable households of

KaLanga in the Lubombo region of Swaziland. This approach is conducive to identify self-sustaining strategies that could improve food security in the region.

A descriptive study demonstrates a picture of a well-defined situation, social setting, or relationship by focusing on the “how” and “why” questions (Mouton, 2011). It is crucial when a researcher is attempting to detail the particular culture of a society. It can emphasise the frequency with which a specific characteristic or variables occurs within a sample (Creswell et al., 2012). In this study, the aim was to understand the eating patterns of vulnerable households in KaLanga in the Lubombo region. It could also help public officials, policymakers, service providers and the public at large to assess the changing needs of households and effectiveness of the existing programmes to improve food security.

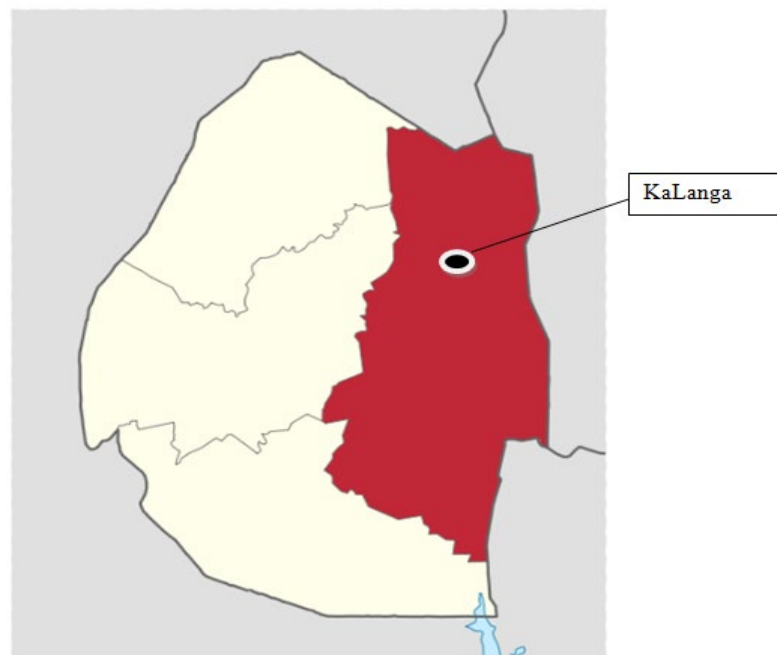
### **3.3 Population and sampling**

#### **3.3.1 Target population**

According to the 2018 Vulnerability Assessment and Analysis, the Lubombo region had a population of 212 531 people. The Lubombo region is the only region where more than half (54%) of the people do not have access to arable land, and the percentage with borderline and lower food consumption had increased from 20% in 2019 to 30% in 2018. Furthermore, this region has the highest Reduced Coping Strategy Index, which is a proxy indicator for food insecurity (Maxwell & Caldwell, 2008). The Reduced Coping Strategy Index measures behaviour and strategies that people or households employ when they cannot access enough food. An increase in the Reduced Coping Strategy Index indicates a worsening food security condition (Swazi VAC, 2019).

The common language spoken in the region is siSwati. The Lubombo region is characterised with high levels of poverty, and socio-economic challenges such as high unemployment rates, shortage of water, limited services, and only a few higher

learning institutions (Swazi VAC, 2019). Figure 3.1 shows a map of Swaziland, highlighting where KaLanga is situated.



Source: World Maps (2017)

**Figure 3.1: KaLanga community in the Lubombo region of Swaziland**

The KaLanga community (Figure 3.1) falls under the Lugongolweni *inkhundla* (administrative subdivision). The community consists of approximately 647 households. The population makes their living mostly from low-income employment activities, such as security guards, cooks, and helpers at surrounding homes. A small number of the residents work in the sugar belt of Swaziland situated in the same region where there are sugar mills (Swazi VAC, 2017). The KaLanga community is considered vulnerable and will consequently be used as the target population for the study (Mavuso et al., 2015). KaLanga was selected as an ideal area of research because of persistent droughts which are most prevalent in the area and rendered most households in the area vulnerable. As a result, it is believed that most households are incorporating coping strategies to improve food security.

### **3.3.2 Sampling method**

A purposive method of sampling was employed in this research. Purposive sampling is a non-probability sampling technique that is selected based on the characteristics of the sampled population and the objectives of the study (Leedy & Ormrod, 2015). In this case, the researcher received a list of households, including primary demographic data from extension officers at the Ministry of Agriculture. The researcher then sampled households with specific characteristics of vulnerability.

The selection criteria for determining the eligibility of participation was based on vulnerability characteristics such as households with one or more children under the age of 18, no or low combined household income, households receiving food aid, households cultivating crops and or vegetables. Due to ethical reasons, only respondents older than 18 years were allowed to take part in the study. Furthermore, the questionnaire was completed by the head of the household, as they would have all the information necessary.

Two hundred (200) of the 642 households in the KaLanga community participated in the survey. The researcher aimed to include at least 30% of households who fit the eligibility criteria mentioned above to ensure that there would be sufficient data.

### **3.4 Data collection instrument**

The use of questionnaires is widely accepted as an accurate and useful instrument to obtain the necessary information. A well-structured questionnaire focus on the crucial information, accurately relaying data from the participant to the researcher (Queirós et al., 2017). The researcher developed a questionnaire for measuring food security in vulnerable households, explicitly for this study (Appendix A). It was sent to experts for review, ensuring content validity and reliability. The questions consisted of closed-ended and open-ended questions. It consisted of three sections, namely socio-

demographic characteristics of households, routine eating patterns, coping strategies when they have shortage of food.

Section A included information on the age, gender, home language, religious affiliation, number of years residing in the area, and occupation of the respondents. In this research, it was important to include religious affiliation, as religion contributes to types of food consumed and food taboos in Swaziland.

Section B sought information on the habitual eating patterns of vulnerable households. The Questions related to the number of meals per day, the number of meals skipped and reasons for skipping meals. Crops that were grown in each vulnerable household and the reason why families were not growing crops were assessed. Moreover, household ownership of livestock and their uses in the home were determined.

Section C focused on coping strategies used in case there is a shortage of food. The respondents were required to make recommendations on how food security can be improved in the Lubombo region. Furthermore, questions included how long the food aid used by the households lasted, as well as the crops they would prefer to grow if dams were to be constructed.

The questionnaire was prepared with the Evasys<sup>®</sup> software to ensure a professional appearance. It was also pre-tested to ensure that the questions were clear and understandable to the prospective respondents.

The questionnaire was pre-tested by distributing it to 10 Swaziland citizens, who completed it on their own. The respondents understood that any uncertainties and ambiguities could be noted. This enabled the researcher to amend and improve the quality of the questionnaire. The respondents completed the questionnaire without any difficulty, and no amendments were made to the questionnaire after the pre-test.



### **3.5 Data collection process**

The data was collected on weekdays from January to July 2019 in KaLanga. The researcher obtained permission from the agricultural offices at Siteki, the capital city of Lubombo, and extension officers at KaLanga Rural Development Agriculture who are mostly working with the community of KaLanga, was assigned to assist her. An RDA officer identified the residences of the purposively chosen respondents, without divulging their names. The researcher randomly visited the households where the head of the household would be briefed about the study. The extension officers did not accompany the researcher to the households, as this could have presented an ethical issue.

Before completing the questionnaire, the researcher explained the aim and objectives of the study, and the respondents were assured of anonymity and confidentiality of the information given. The respondents received consent forms to sign if they agreed to participate in the study (Appendix B). The researcher was present to give clarity if need be but did not influence the respondents when completing the questionnaire. The researcher also assisted those who could not read or write themselves and gave explanations where respondents did not understand the questions well. Participation in this study was entirely voluntary, and the respondents received no incentive for completing the questionnaire.

### **3.6 Data analysis**

Data analysis is the process of systematically searching and arranging the information that was collected to increase a person's understanding and present findings of the data collected (Creswell et al., 2012). The data from the questionnaires was captured on EvaSys© software, from where it was imported into the Statistical Package for Social Sciences, version 25, for analysis. As the study was descriptive and exploratory in

nature, univariate and bivariate analyses were used. Descriptive statistics and exploratory frequencies were used.

### **3.7 Validity and reliability**

All research should aim to provide quality data that is valid and reliable (Leedy & Ormrod, 2015), as it will assist the researcher in drawing accurate conclusions. Researchers describe validity as the extent to which an instrument measures what it is expected to measure, and to do so in a way that reliable results would be yielded (Creswell et al., 2012; Leedy & Ormrod, 2015). Leedy and Ormrod (2015) further stated that there are various forms of validity which are important in different situations. This study applied three categories of validity measurements, namely face, content, and construct validity.

Face validity refers to the degree to which the instrument measures what it is supposed to measure (Leedy & Ormrod, 2015). To achieve face validity, the researcher ensured that all questions in the questionnaire were directly related to the objectives of the study. Content validity refers to how well the instrument covers all aspects of a specific construct (Creswell et al., 2012). The comprehensive literature review informed the development of the questionnaire. Furthermore, it was scrutinised by the study leaders to ensure construct validity.

### **3.8 Limitations of the study**

This study offered several findings to complement the existing body of literature, although some limitations should be noted. The study did not consider the types of food consumed by each of the vulnerable households, such as in the case of household dietary diversity. Clover (2003) defined food security as "food that is available at all times to which all persons have means of access that is nutritionally adequate in terms of quality, quantity and variety". Thus it would have been beneficial to also consider the nutritive value and variety of foods consumed, in addition to the number of meals.

Although a quantitative paradigm is advantageous when doing a numerical presentation of data, a qualitative component would have strengthened the findings. A qualitative part is beneficial because it provides a deep understanding of a given problem and produces in-depth information to understand various dimensions of the problem under analyses or investigation (Queiros et al., 2017). Furthermore, because of the purposive sampling technique used, these results are not generalisable. However, the data could yield important considerations investigated on a large scale.

The use of questionnaires could also be a limitation in the study that respondents could not answer all the questions in the questionnaire. This should be addressed in the quality control during the collection of the questionnaire.

### **3.9 Ethical considerations**

The ethical considerations are a vital component of any research study. For ethical considerations of the dissertation, the researcher was guided by the Singapore Statement on Research Integrity (2010) which sets out the four guiding principles: honesty, accountability, professional courtesy and fairness, and good stewardship.

The researcher sought permission from the Ministry of Agriculture and cooperatives as extension officers from that department assisted in presenting the researcher with a list of possible respondents to sample from. The respondents signed consent forms before completing the questionnaires. Anonymity and confidentiality were ensured by using numerals to identify the questionnaires. There was thus no information on the questionnaire that could identify any of the respondents in the research report. Moreover, no contact details of the respondents were taken to ensure that anonymity and confidentiality were adhered to. After completion of the questionnaires, it was locked in a tamper-proof box that only the researcher had access to. It was then transported to Bloemfontein, where the data was processed.

### **3.10 Conclusion**

This chapter focused on the research design, and the sampling method that was used, which was selected based on the characteristics of the sampled population. Questionnaires were used as data collection instrument as it is accurate and efficient. Data analysis was done using the Statistical Package for Social Sciences, and all ethics adhered to were described.

## Chapter 4

# RESULTS AND DISCUSSION

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### 4.1 Introduction

This chapter presents and discusses the results obtained in relation to the aims and objectives of the research. It consists of three sections. The first section summarises the demographic profile of the respondents. The second section focuses on the routine eating patterns and food consumption of the households. Following the eating patterns and food consumption, the coping strategies used by the households when there is a shortage of food, will be detailed. Lastly, the data will be used to draw a list of the characteristics that could render these households vulnerable.

### 4.2 Demographic profile KaLanga households

Table 4.1 is a summary of the demographic profile of the sampled households in KaLanga in the Lubombo region in Swaziland. Almost half (45%) of the households had more than seven members residing within their homes, while a quarter (25%) consisted of 5–6 members. Thus, 70% of the households had five or more members living within the house. It is not uncommon for African households to consist of more than seven or eight members; however, it does significantly impact food security, especially female- or child-headed households (FAO, 2017). Some reports indicated that there is considerable variance in household size (four to ten members) in Swaziland. However, bigger households are more prevalent in rural areas such as KaLanga (Kgaphola & Viljoen, 2000; Altman et al., 2009; UN, 2017). The size of households, as well as the composition, are closely associated with sustainable development, poverty and well-being in general, and consequently remain a critical aspect to consider for development agendas (UN, 2017).

**Table 4.1: Demographics of KaLanga households**

	<b>Response</b>	<b>Frequency (%)</b>
Number of people currently living in the household (n=195)	1	2
	2–4	28
	5–6	25
	7 or more	45
Age of the respondents (household head) (n=188)	18 years	3
	19–24 years	9
	25–35 years	15
	36–45 years	23
	46–55 years	23
	56–65 years	13
	66 years and older	13
Gender of respondents (household head) (n=197)	Female	66
	Male	34
Religious affiliation (n=178)	Catholic	17
	Evangelical	16
	Methodist	8
	Zionist	25
	Other	34
Home language spoken (n=185)	siSwati	92
	English	1
	Other	7
Years lived in the area (n=196)	2–5 years	7
	6–10 years	8
	11–15 years	10
	16–20 years	9
	More than 20 years	66
Employment status (n=193)	Employed	26
	Unemployed	74
Combined monthly household income (SZL*) (n=92)	1 000–1 999	40
	2 000–2 999	18
	3 000–3 999	8
	4 000–4 999	13
	5 000–5 999	2
	6 000–6 999	2
	More than 7 000	16

\*SZL – Swaziland Lilangeni; ZAR – South African Rand (SZL1 = ZAR1)

The age of the household heads varied between 18 and 66 years and older. Almost half (46%) of the household heads were between 36 and 55 years of age. The groups aged 55–65 and 66 years and older both represented 13% of the respondents. Only 9% of the household heads were between the ages of 19 and 24.

There was an uneven distribution between the gender groups (Table 4.1). More female-headed households were noted (66%), compared to male-headed households (34%). In recent decades, female-headed households have started to increase (UN, 2017), and as a result, a need for a shift towards woman leadership became prominent. Women can be food producers, managers of natural resources, income earners and caretakers of household security (De Graaff et al., 2012). Moreover, women can play a significant role in improving food security (Gibson, 2016).

Most of the respondents' religious affiliations were Christian denominations that existed in the area (Table 4.1). Twenty-five (25%) were Zionists, while Catholics represented 17%, Evangelicals 16% and the Methodists 8%. More than a third (34%) belonged to more charismatic movements such as Assemblies of God, the Nazarene, and Light of the Nation.

The majority of the respondents spoke siSwati (92%), which is the official language in Swaziland. Other spoken languages accounted for 7% of the households.

Two-thirds of the respondents (66%) have stayed in the area for over 20 years (Table 4.1). Nine percent (9%) of the respondents have remained in the area for 16–20 years, and 19.6% out of a hundred percent households have stayed in the area for 6–10 years. Only 7% of the respondents have resided in the area for 2–5 years.

The majority of the respondents (76%) were unemployed (Table 4.1). One can thus conclude that 76% of the household heads did not earn a consistent income and could, therefore, not provide for their households. There was also a lack of employment in the area, and according to literature those working were working were employed in low-paying jobs which caused them to depend on coping strategies (Mavuso et al.,

2015). The vulnerability assessment and analysis indicated that employment opportunities available for vulnerable households in the Lubombo region had drastically reduced; mostly, as a result of the droughts which reduced agricultural employment opportunities. In addition, formal employment was not easily accessible due to the unfavourable economic situation (Swazi VAC, 2017).

Forty percent (40%) of the respondents had a combined household income of SZL1 000–2 999 (Table 4.1). According to NUMBEO (2020), an amount of SZL2 203.42 was necessary for basic food items for an individual per month. This food basket consists of starchy foods, protein, fruit, and vegetables adding up to 2 400 calories which are the WHO minimum daily energy intake requirement (Gibson, 2016). As most of the households consisted of more than four members, it did present a challenge to obtain food security. Moreover, the income was not only used for food but also for other household necessities.

Respondents earning between SZL2 000 and SZL2 999 were 18%, while those earning more than SZL7 000 represented 16% of the sample. Furthermore, respondents earning SZL3 000-SZL3 999 were 8% and respondents earning SZL5 000-SZL6 999 were 4%. Inequality was widespread in Swaziland. Ten percent (10%) of the population earned 40% of the national income (WFP, 2015). The majority of people in KaLanga were unemployed, attesting the income inequality, as well as lack of employment opportunities in rural areas.

### **4.3 Routine eating patterns and food consumption**

This section discusses the regular eating patterns, including the number of meals consumed, as well as the reasons for not eating the meals. The sources of food for the households, which include crops grown and the reasons for not growing crops, are reported. Furthermore, livestock reared, and the use of the animals, as well as possible reasons for not keeping livestock in the households, are discussed.



### 4.3.1 Number of meals eaten at home during most days of the week

The study indicated that approximately two-thirds of the households (63%) ate three meals per day (Table 4.2). This result is in accordance with a previous study which established that there was a gradual change from traditionally consuming two meals per day, to consuming three meals per day (Kgaphola & Viljoen, 2000). A third (34%) of the households consumed two meals per day, and a minuscule 3% only consumed one meal per day.

**Table 4.2: Routine eating patterns**

	Response	Frequency (%)
Number of meals eaten at home during most days of the week (n=186)	1	3
	2	34
	3	63
Respondents eating breakfast (n=195)	Yes	86
	No	14
Respondents eating lunch (n=167)	Yes	90
	No	10
Respondents eating supper (197)	Yes	95
	No	5

In many cultures, the head of the household has the privilege to eat first. After they are satisfied, the food is divided between the rest of the household (Gibson, 2016). This could explain the frequent consumption of meals, which is not a characteristic of food insecure households (FAO, 2017).

### 4.3.2 Frequency of eating breakfast, lunch and supper, and snacking

The majority of the respondents (86%) consumed breakfast (Table 4.2). Of the 14% of households not consuming breakfast, roughly half (52%) cited that there was no food to eat. Fifteen percent (15%) of the households skipped breakfast because they were

saving food. This indicates that respondents were using skipping breakfast as a coping strategy.

The majority of the respondents (90%) did eat lunch (Table 4.2). One in ten (10%) households did not regularly eat lunch. The respondents indicated that they were not taking lunch, either because there was no food (33%) or to save food (30%). Others indicated that they did not eat lunch because there was no time to eat (28%) and 9% had other reasons for not eating lunch.

Almost all of the respondents (95%) enjoyed supper regularly. The minority who did not eat supper (5%), indicated that the main reason was to save food or that there was no food. Compared to the other areas of Swaziland, the Lubombo region was faced with a higher number of shocks such as drought spells, and poor rainfall, leading to crop failure. These shocks exacerbated the situation for already vulnerable households (Swazi VAC, 2016).

Only one in every ten (10%) KaLanga households snacked in between meals, as the majority (90%) did not eat snacks. According to the traditional Swazi, snacking was popular, especially in summer. Common snack foods included boiled fresh mealies, boiled sweet potatoes, boiled nuts, boiled jugo beans, roasted maize, and wild fruits (Dube & Musi, 2002). Snacking has since become less frequent as a result of the shortage of food (FAO, 2017), which was also confirmed by these findings as snacking is not bad though it can lead to weight gain.

### **4.3.3 Sources of food**

The respondents were requested to indicate their sources of food (Table 4.4). Half of the respondents stated that they purchased food (53%), either from supermarkets, local shops, or farm shops. The respondents who grew their own vegetables and crops at home was 36%. They were followed by respondents who received food from donors (8%) and those who received it from neighbours (2%). Only 1% of the respondents

were using social exchange networks to access food. Three percent (3%) indicated other ways in which they obtained food, which included food received from family members, the government or through doing 'piece jobs'.

**Table 4.3: Sources of food (n=163)**

Response	Frequency (%)
Social exchange	1
Donors	8
Home (grown in the garden)	36
Neighbours	2
Purchased	50
Other	3

Shortage of water and rainfall in the region has led to the limited production of vegetables and cereals such as maize (Shongwe et al., 2014), consequently inhibiting the households' ability to produce their own food (FAO, 2017) and making them more reliant on the purchasing of food. As the households did not necessarily have the means to access food, it directly influenced their food security (Gibson, 2016).

#### **4.3.4 Cultivation of crops and vegetables**

Just more than a third of the respondents (36%) grew crops or vegetables. Of those respondents growing crops, maize (53%) was the preferred crop to cultivate. Maize is a staple food of the Swazi people. The respondents indicated that they produced crops such as sweet potatoes (22%), beans (14%), sorghum (4%), and cotton (3%) on a small scale (Table 4.5).

**Table 4.4: Summary of crop and vegetable cultivation**

	<b>Response</b>	<b>Frequency (%)</b>
Crops cultivated*	Beans (n=28)	14
	Cotton (n=5)	3
	Maize (n=105)	53
	Sorghum (n=7)	4
	Sugar cane (n=1)	1
	Sweet potato (n=44)	22
Reasons for not cultivating crops (n=83)	Drought	58
	Shortage of capital	11
	Shortage of farming inputs	10
	Shortage of land	14
	Other	7
Cultivation of a vegetable patch (n=164)	Yes	49
	No	51
Vegetables cultivated*	Cabbage (n=16)	8
	Carrots (n=8)	4
	Green peppers (n=35)	18
	Lettuce (n=76)	38
	Spinach (n=77)	39
	Other (n=43)	22
Yield per year measured in bags (n=114)	1–5	57
	6–10	27
	11–20	9
	21–30	2
	30 or more	5

\*More than one option could be selected; thus the number of respondents are indicated separately

Sweet potato is a drought-tolerant crop and a relatively disease-free crop as compared to maize. Families can process sweet potatoes in a flour form which is rich in carbohydrates. Sorghum is a drought-resistant crop, but the respondents indicated that they grew it only on a small scale because they were unfamiliar with the crop. Beans are a source of low biological protein value which can be suitable for people who earn a low income, as meat is expensive and considered a source of protein with a high biological value. When eaten with another vegetable of little biological value, protein food can result in a high biological value (Tull, 2012; WFP, 2020).

The majority (51%) of the respondents indicated that they did not own a backyard garden due to high costs of obtaining water from the Swaziland Water Services

Cooperation. However, 36% of the respondent did have vegetable gardens in their backyard. The most probable reason for not having a vegetable garden is the high costs for water to irrigate the crops. The water rates of the Swaziland Water Services Cooperation are high, and many low-income households cannot afford to pay for water (Swazi VAC, 2017). When food production is insufficient in a household, it can affect household members' health, resulting in poor health and malnutrition (Mann & Truswell, 2012). Food production can increase household income, which can improve buying power to obtain nutritious food to improve food security.

The majority of the respondents who grew their own vegetables, indicated that they grew spinach (77%) and lettuce (76%). Others indicated that they produced other vegetables such as butternut, garlic, onions, peas, potatoes, pumpkins, tomatoes, and shallots (43%). More than a third of the respondents grew beetroot (37%) and green peppers (35%). Only 16% of the respondents grew cabbage and 8% grew carrots.

There was a variance in the yield of crops grown by the households. More than half (57%) of the respondents harvested approximately 1–5 bags per year. Some respondents (27%) harvested 6–10 bags, and 9% collected 11–20 bags throughout the year. Only a small percentage of the respondents harvested 21–30 bags (2%) or 30 or more (5%). It should be noted that this is the sum of all crops, including home-grown vegetables. One bag contains roughly 25 kg of produce with the following dimensions 661 mm (length) × 344 mm (width) × 141 mm (height) (Encyclopaedia of Food Sciences and Nutrition, 2003).

Although the households attempted to produce their own food, only a few were successful in harvesting sufficient amounts for their households. This conclusion is drawn from the results (section 4.4) that indicate that the majority of the households are reliant upon food aid. Lower-income households generally spend more on food than higher-income households; thus, self-production is crucial to increase food security (FAO/WFP, 2015; Nkondze et al., 2013). In addition, many of the households

prioritised other necessities such as accommodation, transport, and education at the expense of food, thereby adversely affecting nutrition (Gibson, 2016).

More than half of the respondents (58%) indicated that the reason for not growing crops was drought (Table 4.4). The drought caused a shortage of water and rainfall in the region which hindered the growth of crops. Moreover, the Lubombo region generally experiences greater shocks such as prolonged droughts, when compared to the other regions of Swaziland (Swazi VAC, 2016). Since most of the respondents have not been able to grow crops sufficiently to meet their household needs, food prices could be higher in the region due to the higher demand (Cooper et al., 2020). Some respondents indicated that there was a shortage of land (14%), as well as a shortage of farming inputs (10%) that prevented them from growing their own crops. Only 7% of the respondents indicated that their reluctance to cultivate crops was caused by other reasons. In a separate but related question, the overwhelming majority of the respondents (89%) indicated that they would grow their own crops if they received farming inputs such as fertiliser and seeds. Eleven percent (11%) indicated that they still would not grow crops, even if they received the farming inputs mentioned. Engagement of the respondents in agriculture can improve food production in the region that can improve their income and help vulnerable households to be able to afford food and other necessities. It may also reduce food costs as low food production results in higher food prices.

#### **4.3.5 Livestock rearing**

The respondents were requested to indicate the type of animals they kept, as well as its uses for the household (Table 4.5). They named livestock such as cattle, goats and other. However, some respondents had more than one type of livestock. The majority of the respondents (51%) indicated that they kept cattle. Cattle were traditionally a symbol of wealth, used for special occasions or religious ceremonial purposes (Kgaphola & Viljoen, 2000).

**Table 4.5: Summary of livestock rearing and uses**

	<b>Response</b>	<b>Frequency (%)</b>
Type of livestock reared (n=162)	Cattle	51
	Goats	12
	Other	36
Uses of the livestock (n=104)	Ploughing	6
	Sale	48
	Other	46

More than half (51%) of the respondents kept cattle, as well as other livestock which included pigs, chickens, and sheep (36%) and the minority of the respondents were keeping goats (12%) (Table 4.5). A study conducted in the Lubombo region indicated that the vulnerable households had a limited number of livestock due to lack of purchasing power which have forced households to sell their livestock to buy food (Swazi VAC, 2017).

The respondents mostly kept livestock for selling (48%) or consumption (other) for the household (46%). Selling of livestock is an additional source of income (Mabuza et al., 2015). Respondents were, therefore, using livestock as a means of earning income due to unemployment. Only a few respondents used the livestock for ploughing (6%). In earlier years, farming equipment and machinery in Swaziland was limited, therefore cattle and donkeys were used for ploughing and as a means of transport (Kgaphola & Viljoen, 2000). This practise still continues in rural areas where access to equipment is limited (UN, 2017).

#### **4.3.6 Possible crop cultivation**

The respondents were requested to indicate the crops they would prefer to grow if there would be an affordable and reliable supply of water (Table 4.6). The respondents preferred to grow maize (63%) and sweet potato (47%). Twelve percent (12%) of the respondents listed other, which included vegetables, fruit trees, jugo beans, cowpeas, groundnuts, cassava, cotton, and sugar cane. A further twelve percent (12%) of the

respondents also indicated that they would prefer growing sorghum as it was a drought-resistant crop.

**Table 4.6: Identified crops respondents are willing to grow**

<b>Response*</b>	<b>Frequency (%)</b>
Maize	63
Sorghum	12
Sweet potato	47
Other	62

\*More than one option could be selected.

Sweet potatoes can grow well in the Lubombo region as it is a drought-resistant crop that grows well where there is low rainfall of at least 400 mm per year. Sweet potatoes are also suitable for areas with hot temperatures.

## **4.4 Coping strategies**

This section reports on how households earn an income. A study conducted in Swaziland indicated that several households were engaged in coping strategies to reduce pressure to meet their food requirements; however, they were involved in risky coping strategies (Swazi VAC, 2017). It has been reported that some families have started eating certain types of food that they would typically not eat because they are considered toxic or waste (Swazi VAC, 2002).

### **4.4.1 Food aid**

The respondents were requested to indicate their food sources, according to organisations known by the researcher (Table 4.7). The majority of the respondents (60%) indicated that they were receiving food aid from World Vision. Some respondents indicated receiving food aid from the Swaziland Government (20%), the National Emergency Response Council on HIV/AIDS (2%) and UNICEF (2%). Other organisations (16%) who were also handing food aid to the vulnerable households in the Lubombo region, included Caritas, SOS Africa and WFP.



**Table 4.7: Sources and duration of food aid**

	<b>Response</b>	<b>Frequency (%)</b>
Source of food aid (n=170)	World Vision	60
	Swaziland Government	20
	Other	16
	National Emergency Response Council on HIV/AIDS	2
	UNICEF	2
Duration food aid last (n=95)	One month	39
	Two months	4
	Three months	3
	Four months	1
	Less than one month	53

More than half of the respondents (53%) indicated that the food aids lasted less than a month, although some respondents (39%) reported that the food aid lasted for the whole month. Food aid lasting for two months (4%), three months (3%) and four months (1%) were in the minority. The overwhelming majority of the respondents (93%) indicated that they received beans and cooking oil in their food aid parcels. Eighty-three percent (83%) received maize flour in their parcels. Rice (12%), sugar (3%) and mealie rice (1%) were not as prominent in the food aid parcels.

Food aid does not sustain vulnerable households, as it usually has inadequate quantities, nor is it diversified, as it mostly consists of staple foods. The households are still responsible for acquiring animal-based protein and variety with regard to vitamins. Moreover, it is not accessible at any time, as organisations only make donations when they have food to donate (WFP, 20). In some instances, food aid is also thought to be the culprit causing populations to shift away from traditional consumption patterns, although not always true (UN, 2017).

#### 4.4.2 Strategies employed

Roughly a third (36%) of the households indicated that they reverted to coping strategies, whereas two-thirds (64%) did not have a need to employ coping strategies. One of the reasons for the low occurrence of coping strategies could be the reliance on food aid. Table 4.8 summarises the coping strategies employed which include selling chickens by the roadside; taking children out of school; selling local brew; reducing the number of meals per day; reliance on wild food; choosing to purchase less expensive food; borrowing food from neighbours; reducing expenditure on health; skipping meals; making and selling crafts by the sides of the road; working for food and eating only one meal per day. Inadequate access to food forces people to adopt coping strategies to survive. Coping strategies are usually a short-term remedy to cope with hunger and may cause people to move away from a nutritious diet due to a lack of income and resources (Gibson, 2016).

**Table 4.8: Coping strategies employed**

Response*	Frequency (%)
Selling chickens by the road	4
Taking children out of school	2
Selling local brew	2
Reduce the number of meals per day	22
Rely on wild foods (i.e. fruits)	4
Choose to eat less expensive food	9
Borrow food from neighbours	9
Reduce health expenditure	3
Skipping meals	16
Make and sell crafts by the road	5
Work for food	4
Eat only one meal per day	1

\* More than one option could be selected.

Some of the respondents (22%) reduced the number of meals per day, and some (16%) skipped meals altogether to cope when there was a shortage of food. Nine percent (9%) of the respondents borrowed food from neighbours and chose to eat less

expensive food. A few (5%) respondents made and sold crafts by the side of the road. The strategy of borrowing food from neighbours can lead to debt as vulnerable households have no means of income, and it may even negatively affect relationships between neighbours if they fail to pay back the borrowed food. Moreover, three groups of respondents (4%) indicated that they worked for food, relied on wild foods, and were selling chickens by the side of the road. Only 3% applied the coping strategy to reduce health expenditure. The minority of the respondents were those that were taking children out of school (2%) and eating only one meal per day (1%).

#### **4.4.3 Possible assistance for coping**

In an open question, which related to the assistance that would benefit respondents, the overwhelming majority (97.3%) suggested that the construction of dams would help in irrigating the crops grown by the households and for livestock use. The respondents further stated that dams could provide irrigation, enabling them to grow crops all year round. They also requested fencing to keep livestock away from the fields, and fruits trees as it does not need much water and attention.

The respondents recommended that communities should be encouraged to work together to share farming skills. Furthermore, sharing of land can help those who do not have land to grow crops, and it may also make fencing easier. Moreover, some respondents indicated that the creation of markets in the region for their products could reduce transport costs and other expenses when selling their produce. The establishment of factories in the region can create jobs and create markets closer to the households.

However, for these suggestions to be effective, the successful implementation of policies, in addition to the employment of Swazi Government initiated intervention plans, were necessary. The results of the study indicated that the majority of the respondents were positive towards the prospects of growing crops to ensure sufficient food for their households, as well as generating an additional income. Growing crops

could create employment opportunities. If successfully done, processing factories in the region can reopen, and create non-agricultural employment as well as contribute towards the economy.

## **4.5 Conclusion**

This chapter presented the results and discussion on the habitual eating patterns of the vulnerable KaLanga households, crops grown by the vulnerable households and reasons for not growing crops, the types of livestock kept by susceptible households and their uses in the families. Coping strategies employed by vulnerable households when there was a shortage of food were also discussed. Last, possible assistance for coping, as indicated by the respondents, were discussed.

## Chapter 5

# CONCLUSION AND RECOMMENDATIONS

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### 5.1 Introduction

This chapter presents conclusions drawn from the research in relation to the objectives. The primary purpose was understanding the food insecurity in vulnerable households of KaLanga in the Lubombo region of Swaziland. The significance, evaluation and recommendations of the study are presented together with suggestions for future research.

### 5.2 Conclusions

#### 5.2.1 Food consumption patterns of the vulnerable households

The first objective was to describe the food consumption patterns that were concerned with the number of meals consumed per day by vulnerable households in KaLanga. The study found that the majority of the respondents consumed three meals a day. However, the food consumed was not stated, so it was challenging to determine whether the food was nutritious enough to sustain a healthy life. The results were similar to eating patterns of a previous study which showed that there was a gradual change away from traditional meal patterns (Kgaphola & Viljoen, 2000). If meals were to be skipped, it would most likely be lunch, and the main reason would be to save food, or that there was no food to eat.

Snacking in between meals was not popular with the majority of the respondents. Although, according to the Swazi's traditional eating patterns, snacking was popular, especially in summer. The researcher concludes that fewer crops were cultivated as a result of the prolonged droughts and shocks, resulting in a lack of food. The consequence was skipping meals, reducing portion sizes, and not snacking.

Moreover, the high unemployment rate limited the households' access to food. The droughts and struggling economy contributed to higher food prices, further exacerbating the situation. Poverty is a key driver of vulnerability which affects food security directly. Unemployment, climate change, lack of farming inputs and land can affect food security and increase reliance on food aid.

### **5.2.2 Factors contributing to food shortages in KaLanga**

The second objective of the study dealt with factors contributing to food shortages in the KaLanga community. The factors included the limited growing of crops, keeping of livestock and source of income to the vulnerable households. The main reason for not growing crops was the drought; thus, no reliable source of water as purchasing water is too expensive. The results concur with findings by other researchers who stated that there had been a significant decline in crop yields which was higher in the Lowveld compared to other regions of Swaziland (Mavuso et al., 2015; Swazi VAC, 2016).

Since the majority of the respondents had to purchase their food as they did not grow their own crops, food prices were likely to be higher in the region due to food demand. The impact of local food prices changes the household's diet, and nutrition is dependent on whether they are net buyers or producers (Mazzocchi et al., 2012). Moreover, inadequate or lack of infrastructure such as roads may cause people to travel long distances which increases the price of food. The Lubombo region has very few markets, especially for maize, forcing individuals to travel long distances to purchase food, adding to the overall cost of food (Swazi VAC, 2016).

The decrease in livestock breeding contributes to the decrease in crop cultivation. Mavuso et al. (2015) highlighted that roughly 65% of the households reported poor soil productivity due to loss of soil fertility caused by a shortage of manure. The manure, which was previously applied to the fields to make the soil fertile, have decreased because the droughts and shocks caused significant livestock deaths (Swazi

VAC, 2017). Many of the households cannot afford the initial costs of resuming livestock farming on a larger scale. The cattle, goats, pigs, and chickens kept are mostly for limited sale and household consumption. Swazi VAC (2017) reported that the Lubombo region have experienced higher cattle deaths in 2016 due to a lack of vegetation and poor pasture conditions.

Cattle were used for the production of milk as it was one of the valued foods in the traditional diet in Swaziland, particularly in the form of sour milk, mixed with sorghum or ground maize. Milk is a protein source with a high biological value, and the loss of cattle has resulted in people not getting enough of this nutrient and have increased its cost price in shops. According to research, protein consumption and other micro-nutrients such as vitamin A and iron has decreased in this region, which has resulted in stunted growth and other deficiency diseases (Swazi VAC, 2016). Consumption of nutrient-rich foods is essential to improve food security in households.

Sustainable food security requires sustainable income for households to have the means to buy food rather than produce it (NFSPS, 2005). The majority of the respondents were unemployed and therefore did not have a stable and sustainable income to maintain food security. Some of the respondents are low-income earners, which generally implies that a higher percentage of the income is spent on food purchases. Higher food prices render these households more vulnerable, especially in rural regions. The imbalance in rural and urban income levels have compromised the standard of living in rural areas of Swaziland.

### **5.2.3 Employed coping strategies in case of a shortage of food**

The third objective of the study dealt with the coping strategies used by vulnerable households in case there was a shortage of food. The results of the study confirmed that household food security in rural households was compromised as most households employed various coping strategies when food was insufficient. However, many of the respondents were not relying on general coping strategies; instead, they

were heavily reliant on food aid from different organisations. Food aid is a short-term remedy, as most respondents indicated that it did not last for the whole month. In addition, food aid is not always consistently available. The food aid parcels consist of cooking oil, beans, maize meal, and some have rice and mealie rice.

The coping strategies used were selling chickens by the roadside, taking children out of school, selling local brew, reducing the number of meals per day, relying on wild fruits, choosing to get less expensive food, borrowing food from neighbours, reducing expenditure on health, skipping meals, making and selling crafts by the side of the road and eating only one meal per day. Coping strategies are usually a short-term remedy to cope with hunger. Coping strategies caused people to shift from a nutritious diet to an unhealthy diet due to shortage of food. It should be noted that food security is a concern for all countries in the SSA region, and it has been said that coping strategies do not sustain life; instead, it only provides a short-term remedy for food shortages.

#### **5.2.4 Empirical evidence and recommendations**

Certain areas of concern regarding the eating patterns of the sample have been noted in this study. These concerns are related to types of food eaten whether it was nutritious or not, as food security is achieved when all people have physical and economic access to sufficient, safe, nutritious food at all times to meet their nutritional needs. Another area of concern was the food aid, as it mostly consisted of carbohydrates and proteins of low biological value, which were often not enough for a month's supply and therefore jeopardised food security.

The following recommendations are made to the government of Swaziland, the Ministry of Agriculture and cooperatives, the Ministry of Health, the *Tinkhundla* (administrative subdivisions), *Umpakatsi* (chiefdom) and households:



- Noting that food security is a concern for all countries in the SSA region, it has been stated that coping strategies and food aids do not sustain life; therefore, a sustainable strategy such as producing enough food should be put in place so that all people can access food at all times. In addition, the country's food security policies should be adhered to, especially the four pillars of food security which are availability of food, access to food, utilisation of food and stability in food provision in order to improve food security in vulnerable households.
- . The State should also consider the construction of dams in the Lubombo region or a piped water system from the Lusip project at Siphofaneni to KaLanga so that households will be able to produce their own crops instead of relying on food aid and coping strategies which are only a short-term remedy.
- In addition, the government should create a vulnerability database that is useful for identifying both chronic and transitory vulnerabilities. This may assist in having continued input support to the chronic vulnerable group in the rural areas to improve food security.
- The Ministry of Agriculture should promote growing of drought-resistant crops, high-yielding crops (sorghum and sweet potatoes), and cash crops (cotton and sugar cane) and have reliable markets for the households to improve their buying power which will improve food security.
- *Tinkhundla* centres, with the help of the Ministry of Agriculture, may assist in finding experts to train communities on how to add value to their crops, for instance peanut butter from groundnuts.
- *Umphakatsi* should ensure that enough land has been allocated to households to promote crop production and the growing of fruit trees.

### **5.3 Recommendation for future research**

An in-depth comparative study on food security in vulnerable and non-vulnerable households in the Lubombo region of Swaziland should be conducted. A strong qualitative component could yield valuable information to inform future policies. Moreover, as this research study is not generalisable, it could be repeated in other regions to develop location-specific sustainable intervention programmes. Investigating the vulnerable database will be useful to identify both chronic and transitory vulnerable households and specific ways in which they can be assisted, adding value to the intervention programmes.

### **5.4 Conclusion**

The study has shown that food security is principally related to household income and directly influenced by engaging in agriculture to increase crop production to maintain a healthy life. The influence of climate change seems to have contributed much to the availability, accessibility, utilisation, and stability of food in households. This was confirmed by the majority of respondents relying on food aid. Eating patterns have been influenced as a result. Furthermore, the nutritional value of food is not taken into consideration when making donations to vulnerable households which may increase nutritional deficiencies. The respondents confirmed that cereals and beans were the popular foods donated through food aid.

Furthermore, the majority of the respondents were unemployed, and those employed were low-income earners. The availability of water sources, especially in the dry regions of Swaziland, can improve crop production, which can help improve food security in vulnerable households. This was confirmed by the majority of respondents who showed interest in growing of different crops for their own consumption and to provide an income.

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## 2. ROUTINE EATING PATTERNS

2.1 How many meals do you eat at home most days during the week

- 1                                       2                                       3  
 Other

2.2 If other, please specify

Please answer the following questions

- |                          |                              |                             |
|--------------------------|------------------------------|-----------------------------|
| 2.3 Do you eat breakfast | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2.4 Do you eat lunch     | <input type="checkbox"/>     | <input type="checkbox"/>    |
| 2.5 Do you eat supper    | <input type="checkbox"/>     | <input type="checkbox"/>    |

If no is selected, please indicate the main reason for not having meals for breakfast, lunch and supper respectively

- |               |                          |                          |                          |                          |                          |                          |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2.6 Breakfast | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.7 Lunch     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.8 Supper    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

There is no food  
 Too early to eat  
 No time to eat  
 I become sick when eating  
 To save food  
 Other

2.9 Do you usually snack

- Yes                                       No

2.10 Where do you mostly get your food

- Home (Grow it in the garden)       Donors                                       Neighbours  
 Social exchange                       Other

2.11 If other, please specify

2.12 Which crops do you grow at your home (More than one may be selected)

- Beans                                       Cotton                                       Maize  
 Sorghum                                       Sugar Cane                                       Sweet Potato  
 Other

2.13 If other, please specify

2.14 Please indicate what the reason is if you do not grow crops

- Drought                                       Shortage of land                                       Shortage of farming inputs  
 Shortage of capital                       Other

2.15 If other, please specify

## 2. ROUTINE EATING PATTERNS [Continue]

2.16 Which type of livestock do you keep

- Cattle
  Goats
  Sheep

Other

2.17 If other, please specify

2.18 What do you use the livestock for

- Sale
  Ploughing
  Other

2.19 If other, please specify

## 3. COPING STRATEGIES USED IN CASE THERE IS SHORTAGE OF FOOD

3.1 What is the main source of income for the family

- Formal employment
  Agriculture (Farming)
  Selling

Other

3.2 If other, please specify

3.3 What is the combined income of the household

- 1000 - 1999
  2000 - 2999
  3000 - 3999  
 4000 - 4999
  5000 - 5999
  6000 - 6999  
 7000 and more

3.4 How much is your yield per year (measured in bags)

- 1 - 5
  6 - 10
  11 - 20  
 21 - 30
  30 or more

3.5 Do you have a vegetable garden in your backyard?

- Yes
  No

3.6 If yes in 3.5, please specify which vegetable you grow (more than one answer may be selected)

- Beetroot
  Cabbage
  Carrots  
 Green Peppers
  Lettuce
  Spinach  
 Other

3.7 If other, please specify

3.8 Do you have to make use of coping strategies?

- Yes
  No

3.9 Which type of coping strategies do you make use of (more than one answer may be selected)

- Selling chickens by the side of the road
  Taking children out of school
  Selling local brew  
 Reducing the number of meals per day
  Reliant on wild foods
  Choose to eat less expensive food  
 Borrow food from neighbours
  Reduce expenditure on health
  Skipping meals  
 Make and sell crafts by the side of the road
  Work for food
  Eating only one meal per day

3.10 Do you make use of food aid

- Yes
  No

3.11 If yes, where is the food aid from

- NERCHA
  World Vision
  UNICEF  
 Swaziland Government
  Other



**3. COPING STRATEGIES USED IN CASE THERE IS SHORTAGE OF FOOD [Continue]**

3.12 If other, please specify

3.13 How long does the food aid last

- |  |                                   |   |
|--|-----------------------------------|---|
| <input type="checkbox"/> Less than one month | <input type="checkbox"/> 1 month  | <input type="checkbox"/> 2 months           |
| <input type="checkbox"/> 3 months            | <input type="checkbox"/> 4 months | <input type="checkbox"/> More than 4 months |

3.14 Do you enjoy the food donations you receive

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

3.15 Please indicate which type of food is usually donated (more than one option can be selected)

- |                                      |                                      |  |
|--------------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Beans       | <input type="checkbox"/> Cooking oil | <input type="checkbox"/> Mealie meal   |
| <input type="checkbox"/> Mealie rice | <input type="checkbox"/> Rice        | <input type="checkbox"/> Soya products |
| <input type="checkbox"/> Other       |                                      |  |

3.16 If other, please specify

3.17 Would you prefer if farm inputs can be provided

- 
- Yes

3.18 Would you prefer if dams be constructed all over Swaziland

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

3.19 Which crops would you like to be able to grow in your community (more than one option may be selected)

- |                                       |                                |                                  |
|---------------------------------------|--------------------------------|----------------------------------|
| <input type="checkbox"/> Beans        | <input type="checkbox"/> Maize | <input type="checkbox"/> Sorghum |
| <input type="checkbox"/> Sweet Potato | <input type="checkbox"/> Other |                                  |

3.20 If other, please specify

3.21 Do you think your family benefits from growing crops

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

3.22 If Yes in 3.21, briefly explain how

3.23 If No in 3.21, briefly explain why

3.24 What recommendation would you give that can help improve the food security in your region

***Thank you for your participation, it is appreciated.***

# Appendix B

## CONSENT FORM



Department Consumer Science

Tel: +27 51 401 2572

Fax: +27 866 934 974

### INFORMATION LEAFLET:

Dear Participant. My name is Vuyisile Colleen Mondlane. I am doing research with the University of the Free State. We are conducting a survey about "Understanding the food security in vulnerable households at Kalanga (Lubombo region), Swaziland. The information we collect will assist the government to find permanent strategies that can improve food security in Swaziland. The questions will take 15 to 20 minutes to complete. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. Participation is voluntary, because your views are important, we sincerely hope that you will take part. If you choose, you do not have to answer questions you feel uncomfortable with. If you require more information, please feel free to contact me.

### INTERVIEWER DECLARATION:

I, Vuyisile Colleen Mondlane declare that I have asked this questionnaire as it has been laid out. I declare that all responses which have been recorded are the true responses of the respondent and that I have fully checked the questionnaire.

Signature: .....

Date: .....

### PARTICIPANT CONSENT:

I, ..... agree to take part in the aforementioned survey. I understand that my responses to this survey will be treated with the strictest confidence. I further understand that I will not receive any compensation for taking part in this study.

Signature: .....

Date: .....



# Appendix C

## TURNITIN RECEIPT



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File size: 652.04K  
Page count: 104  
Word count: 28,401  
Character count: 154,749  
Submission date: 19-Aug-2020 10:38AM (UTC+0200)  
Submission ID: 1371332584

#### ABSTRACT

Food security is a worldwide concern, specifically relating to developing countries. A substantial amount of research investigated the causes, consequences and possible solutions to this challenge. Well eluded in most studies is the vulnerability of Sub-Saharan Africa's (SSA) developing countries. Part of the Southern Africa region, Swaziland is not exempt from the challenges facing most SSA countries. Roughly 80% of the Swazi population is rural-based, and their livelihoods are dependent on subsistence farming and livestock rearing. Climate change has affected crop production, in addition to the severe droughts occurring during the last three decades. The people experienced severe food shortages as a result. The main concern is to ensure that all people are food secure to prevent negative consequences on the citizens' health and wellbeing. Food security is essential at all levels, particularly at the household level, to ensure good nutrition. Although there are food security policies in place in Swaziland, many households are food insecure. Food aid relief is a short term remedy, which does not improve long-term food security, especially in rural areas. Therefore permanent, self-sustaining strategies should be researched to ensure accessibility to food by all households at all times in Swaziland. One possible way to ensure sustainability could be to focus on the sufficient production of food by households. The scarcity of food has resulted in the deterioration of the nutritional status of vulnerable households, affecting their productivity. Hence, the overall aim of this research was to understand eating patterns of vulnerable households in KaLanga in the rural Lubombo region of Swaziland. In addition, the researcher aimed to identify factors contributing to malnutrition and understand coping strategies used by the households when there was a shortage of food. This research is quantitative, explorative and descriptive in nature with a cross-sectional approach. The researcher

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# Appendix D

## EDITING CERTIFICATE

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### TECHNICAL EDITING/PROOFREADING SERVICES – DORA DU PLESSIS

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Langenhovenpark 9300

082 635 0214  
technicalediting.dora@gmail.com

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August 2020

#### CONFIRMATION OF EDITING AND PROOFREADING

I hereby confirm that I have done the technical layout and language editing for the following dissertation:

Student: Vuyisile Colleen Mondlane  
Title: Understanding the food insecurity of vulnerable households residing in KaLanga, Swaziland  
Degree: Master of Science majoring in Consumer Science  
Department: Department of Consumer Science, Faculty of Natural and Agricultural Sciences, University of the Free State

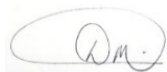
My work for the student included the technical layout of the document, as well as proofreading for grammar, punctuation, spelling, and sentence structure. I tried to keep as much as possible of the student's own writing style and making sure that the student's intended meaning was not altered in the process. I also checked the list of references making sure that dates, spelling, and names used in the text are consistent with those listed in the reference list.

A copy of the edited document with track changes is available on request.

I have 40 years of experience in typing, editing, and proofreading for postgraduate students from universities all over South Africa. I gained my experience during the years I was typing student dissertations and theses and also while working at different departments at the UFS. I also assisted in compiling a document on technical layout and referencing methods for the Centre for Environmental Management (CEM) and have presented guest lectures on referencing methods to postgraduate students at CEM as well as the Department of Urban and Regional Planning at the UFS.

Disclaimer: The ultimate responsibility for accepting or rejecting the changes and recommendations rests with the student and I cannot be held responsible for any layout or language issues that might have emerged as a result of subsequent amendments to the text.

Yours sincerely



Dorothea M du Plessis  
Technical Editor