UNIVERSITY OF CAPE COAST

FARMERS' SUPPORT SYSTEMS AND FOOD SECURITY IN ABURA ASEBU-KWAMANKESE DISTRICT, GHANA

BY

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Thesis submitted to the Department of Integrated Development Studies of the School for Development Studies, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy degree in Development Studies

AUGUST 2019

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature ……Date …….

Name: Princess Barbara Olu

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

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ABSTRACT

Ensuring food security through the provision of support systems remains essential for rural agriculture development. There is evidence that farmers support systems have important functions for directing and facilitating technology adaptation, promoting transfer of knowledge and hence promoting food security in developing nations. However, in spite of Ghana's efforts in promoting food security, there are contentions that available support systems have hardly incorporated rural farmers. This study focused specifically on farmers support systems available for promoting food security in the Abura Asebu Kwamanksese (AAK) District in the Central region of Ghana. The study relied on the entitlement and sustainable livelihood theory. Using a qualitative approach, the study adopted an explanatory design. The purposive sampling technique was employed to select respondents for focus group discussions, indepth and key person interviews. The secondary data was obtained from policy documents on agricultural strategic plan. Primary data were analyzed through a thematic analysis, whilst secondary data were analyzed through documentary analysis. The study found that there was ineffective coordination and inter-agency linkages resulting in ineffective implementation processes. Critically, the support systems provided in the AAK district were insufficient, selective and discriminatory. The study recommends the need for the intensification of support systems for farmers through the effective utilization of extension officers and other key stakeholders to promote food security.

KEY WORDS

Farmers Support Systems

Food Security

Food Availability

Food Accessibility

Sustainable

Livelihood Rural

Development

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisors, Dr. Joseph Boateng- Agyenim and Dr. Frederick Koomson both of the School for Development Studies for their professional guidance, advice, encouragement and suggestions which were enormously helpful in improving this work. My second appreciation goes to Mr. Clement Abaido and Mr. Emmanuel Duah Mensah for the encouragement and support they gave me throughout this learning process. Stephen, Tracy and Phillip also contributed greatly during the data collection stage of this work. I also thank Mr. Samuel Abraham, the District Director of Food and Agriculture and the Agriculture Extension Agents of Abura Asebu-Kwamankese District for offering their suggestions and contributions to the study. My final appreciation goes to my exquisite parents, husband, siblings and friends for their unwavering support.

DEDICATION

To my wonderful parents, husband and siblings

Rev. Dr. and Dr. Mrs Ellen Louise Olu Fagbemi, Nana Kofi Fredua Agyeman,

Prince-William, Lorretta Motu, Edwina Michelle, Pearl Louise and Jason

Amo Olu Fagbemi

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AAKD	Abura Asebu-Kwamankese District
AEA	Agricultural Extension Agent
APP	Africa Progress Panel
CAADP	Comprehensive Africa Agriculture Development Programme
DDoFA	District Department of Food and Agriculture
DAD	District Agriculture Director
ECA	Economic Commission for Africa
FAD	Food Availability Decline
FAO	Food and Agriculture Organisation
FASDEP	Food and Agriculture Sector Development Policy
GDP	Gross Domestic Product
GoG	Government of Ghana
GPRS	Growth and Poverty Reduction Strategy
HIPC	Highly Indebted Poor Countries
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
I-PRSP	Interim Poverty Reduction Strategy Paper
MMYE	Ministry of Manpower, Youth and Employment
MoFA	Ministry of Food and Agriculture
NGOs	Non-Governmental Organisations
OECD	Organisation for Economic Co-operation and Development
PSIA	Poverty and Social Impact Analysis

SATTIFF	Strengthening Innovations and Technology Dissemination for Sustainable development in cereals, cocoa and coffee value chains in western and eastern Africa
SLT	Sustainable Livelihood Theory
SSA	Sub-Saharan Africa
UNCTAD	United Nations Center for Trade and Development
UNDP	United Nation Development Planning
WAAPP	West African Agricultural Productivity Program
WFP	World Food Programme
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION

Background to the Study

Food is a basic necessity of life and as a result, food security has been a pressing issue in both historical and recent global development discourse (Food and Agriculture Organisation [FAO] 2015, International Fund for Agricultural Development [IFAD] 2015, International Monetary Fund [IMF] 2015, Organisation for Economic Co-operation and Development [OECD] 2015, United Nations Center for Trade and Development [UNCTAD] 2015 & World Food Programme [WFP], 2015). Attempts to ensure food security is one of the most critical themes for both global and national leadership policy (FAO, 2013). Food security is not only significant for the benefits of human health, but also serves as a basis to achieve sustained economic growth and well-being (Holben, 2010). However, food insecurity has been an established challenge and a source mounting concern confronting developing countries, especially rural communities (Mariola, 2012)

According to FAO, IFAD and WFP (2013), 827 million hungry people live in developing countries with a prevalence of undernourishment estimated at 14.3 percent. This has been attributed to intense pressure of acute drivers such as climate variability and extreme weather events, population growth, natural resource constraints, competing demands, and speculative and unpredictable food markets with venomous impacts on global food security (FAO et al., 2015; Africa Progress Panel [APP], 2012). In sub-Saharan Africa (SSA) 224.7 million people (28.4% prevalence) are described to be undernourished/facing food crises (FAO, IFAD & WFP, 2013). Paradoxically, researchers argue that most

of the food insecure in sub-Saharan Africa are rural food producers (FAO, 2012; Kuwornu, Suleymana & Amegashie, 2013).

The root of SSA's food security issues have been emphasized by United Nation Development Planning [UNDP] (2012), as misguided policies, weak institutions and failing markets. These issues of concern have led world leaders over the years to adopt several strategies to deal with the fundamental challenges of food insecurity (FAO, 2015; Omotesho, Adewumi, & Fadimula, 2010). These strategies have ultimately led to a deeper focus on the forms of practices across regions, countries, and social groups on how to adopt and adjust policies to make food produce available and accessible to ensure food security (Lam, Remais, Fung, Xu, & Sun, 2013; Vink, 2012).

Food security is said to exist 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 (FAO, 2013). The agriculture sector of every economy plays a significant role in ensuring food security because of the number of people they feed in the world. FAO (2013) confirmed that more than half the people of the world and the vast majority of the people in developing countries such as Asia, SSA and Latin America gain part or their entire livelihood from the practice of agriculture.

The World Bank (2013) further indicates that, the predominant activity for most rural households in SSA is agriculture. The agriculture sector offers a strong alternative for spurring growth, overcoming poverty, improving farm income, creating employment, generating revenue for governments and ensuring food security. The agricultural sector in SSA is mainly based on smallholder farms and contributes about 29 percent to Gross Domestic Product

(GDP) and employs up to 65 percent of the labour force (World Bank, 2013; Vink, 2012).

Omotesho, Adewumi and Fadimula (2010) have argued that in SSA, demographic pressures and land constraints; inadequate of capital related to poverty, missing markets; and insufficient public goods are key challenges faced by the agricultural sector. Rural populations suffer many of the crises because they do not produce sufficient food since they do not have sufficient purchasing power to cover their food needs to ensure human security (Kuwornu, Suleymana & Amegashie, 2013; Vink, 2012)

According to FAO, IFAD and WFP (2015), if SSA, Asia and Latin America should make any progress achieving towards SDGs 1&2 for ensuring food security in the agriculture sector, it has to be associated with rapid sustainable rural agricultural development. In order to ensure sustainable rural agricultural development, the mobilisation and organisation of players involved in agricultural production growth is vital. These players consist of smallholder farmers who play a key role in livelihoods creation by promoting food security. Farmers' support systems are vital especially for the risk exposed and vulnerable people in the society (Sikwela, Fuyane & Mushunje, 2016; De Waal, 2015; Effah-Abedi, 2014, Ellis & Freeman, 2004). Farmers' support systems are strongly coordinated bottom-up approach organized for farmers by institutions to act upon their knowledge to accelerate modernization and innovation transfer to promote social and economic activities through public research, public education and extension bodies (Rand and Proost, 2009).

UNCTAD (2017) reveals that productivity of agriculture in developing economies is relatively low. Farmers have little support from their governments, with African countries spending only 3 percent of their budget on

agriculture which is disproportionate to the size of the sector in terms of employment and economic activity (UNCTAD, 2017). Nonetheless, it is responsibility of every government to provide the public goods needed by societies to remain peaceful and prosperous (Prakash-Mani, 2013).

Ensuring food security by providing farmers with the necessary support systems is essential for the development of rural agriculture (IFAD, 2015; Effah-Abedi, 2014). Farmers' support systems have important functions for directing and facilitating technology adaptation, promoting transfer of knowledge (Nata, Mjelde & Boadu, 2014; UNDP, 2012; Namara, Awuni, Barry, Giordano, Hope, Owusu & Forkuor, 2011). Support system in agriculture varies from agriculture extension services delivery, to information sharing and decision-making support mechanisms and technology (Aburinya, 2017; Effah-Abedi, 2014; Savikurki, 2013; Sikwela & Mushunje, 2013).

In line with the entitlement theory and sustainable livelihood framework, support systems are noted to be vital because farmers' livelihood and food security can be promoted when institutions play vital role in ensuring that available assets and resources in production are efficient and made available (Sen, 1989; Ellis & Freeman, 2004; Todaro & Smith, 2012). Farmers' support systems play a key role to build on indigenous knowledge and enrich with appropriate information from outside instead of ignoring or replacing it (Namara et al., 2011; Owusu & Abdulai, 2009). It also improves food security by improving quality, volume and nutritional value of products produced by smallholder farmers throughout the year (Sianjase & Seshamani, 2013).

According to Sakyi-Dawson, Jiggins, Hounkonnou, Kossou, Traore, Roling and Van Huis (2016) farmers' support systems through the delivery of education, improved varieties of seed and fertilizers with targeted subsidies, credit and market empower farmers to realize higher yields to promote food security. The authors further note that, effective policies on farmers support systems in countries and communities where food security is a major issue, agricultural development has the largest effect on overall food security. Farmers support systems to promote food security have relevance for rural economies of Ghana.

The economy of Ghana is made up of the formal and the informal sectors. The informal sector, which is mainly agricultural, is located in rural areas (Nata, Mjelde & Boadu, 2014). The primary occupation in the rural areas is mainly agricultural and agriculture-related enterprises. According to the Ministry of Food and Agriculture [MoFA] (2011), Ghanaian agriculture is predominantly practiced on smallholder, family-operated farms, using rudimentary technology to produce about 80 percent of the country's total agricultural output. Food production and availability per year is dependent on rainfall during and between growing seasons, and the level of production (Ayerakwa, 2017).

Exploring farmers' support systems and food security is significant to rural development since rural households form the bedrock of society. Most resources needed for societal transformation are mainly found in the rural areas and these resources are heavily depended on by rural people for survival. Similarly, Kuwornu, Suleymana & Amegashie, (2013), explained the issue of farmers' support systems as important in developing countries, particularly Ghana, where the majority of the people is found in the rural areas.

Ghana's food security issues have escalated with increasing population, low productivity of farm lands, importation of food, climate change issues, poor knowledge of systems of farmers, largely illiterates and low-income people in farming among others (MoFA, 2011). In order to reduce food insecurity, Ghana's MoFA has outlined several measures in response to food security problems in the country. These measures include modernizing agriculture, improving food storage, enhancing indigenous peoples' knowledge and reducing post-harvest losses (MoFA, 2011). These measures demand that sufficient support systems are needed in order to make significant progress towards the achievement of these strategies.

The Abura Asebu-Kwamnkese [AAK] District is one of the poor districts in the Central Region of Ghana with about 90 percent rural population (GSS, 2014). Farming is the main source of livelihood for a majority of households. Most of the households in the district (92.5%) are involved in crop farming with crops such as cassava, maize, plantain, citrus, palm, and cocoa being dominant. The district is widely noted to have in abundance, a lot of agriculture based investment opportunities most of which are yet to be exploited. Despite the diverse opportunities and dominant economic activities in agriculture, the district faces threats of food security issues and poverty.

Statement of the Problem

Challenges in the management of food security in Ghana have been attributed to many factors including inadequate extension service, limited access to credit, lack of infrastructure and insufficient access to equipment and

inputs (MoFA, 2011). One of the key issues has been the fact that farmers' support systems have been weak, inadequate and costly to farmers (Namara et al., 2011). Despite Ghana's efforts towards making significant improvements in food security in all the areas, there are concerns that support systems to ensure food security have not been able to include vast segment of farmers, especially those in the rural areas (Nata et al., 2012; Effah-Abedi, 2014).

In the AAK district food security issues loom due to the huge inadequate extension services, low productivity of farmers coupled with inadequate modernized agriculture inputs. Worse of the situation in the AAK district is the fact that most of the food crop farmers have resorted to converting their farms into the production of cash crops, notably citrus, oil palm and cocoa with most of the farmers attributing their actions to low prices of output, insufficient market, post-harvest losses and climate change issues in relation to drought and pest attack (Dzadze, Aidoo & Nurah, 2012). According to Dzadze, Aidoo and Nurah, farmers face serious support systems challenges which have diverse negative implications affecting food security in the AAK district. Given the need to understand the existing reality of food production with the needed empirical backing, this study seeks to explore the various support systems available for promoting food security in the district.

Purpose of the Study

The study described generally how farmers support systems are carried out to promote food security to ensure a sustainable rural development for economic growth. It examined the strategic plan for food security in Ghana in relation to the AAK district as well as the implementation of farmers' support system in the AAK district. It also assessed the available farmers' support

systems for promoting food security and how the challenges facing them could be addressed.

Research Objectives

The main objective was to explore farmers' support systems and their contribution to food security in the Abura Asebu-Kwamankese district. The specific objectives of the study were to:

1. Examine the strategic plan for food security in Ghana in relation to the AAK district
2. Examine the implementation of farmers' support systems in the AAK district
3. Assess farmers' experiences of available support systems for promoting food security in the AAK district
4. Analyze the challenges faced by farmers in accessing food security support systems

Research Questions

The study sought to answer the following questions:

1. What strategic plan exists for food security in Ghana in relation to the AAK district?
2. How are farmers' support systems implemented by the stakeholder in the AAK district?
3. What are the farmers' experiences of the available support systems for promoting food security in the AAK district?
4. What are the challenges of promoting food security through support systems in the AAK district?

Significance of the Study

The study will be very significant in diverse aspects. The review of Ghana's agriculture food security strategic plan would inform policy makers of the need to revisit the issues and embark on a possible national review in order to ensure that contemporary issues are captured. It is hoped that the study will help policy makers to develop policies for rural agricultural development in Ghana. This study will also be important for local level implementation of agriculture polices and food security strategies. The study will help in advancing knowledge about the challenges of farmers in Ghana. The study will also provide information on how to improve farmers' livelihoods and their standard of living. Most importantly, the study will identify the relevance of food security support systems and its contribution to rural agricultural development and add to existing literature on food security and support strategies.

Delimitations

The study was geographically carried out in the Abura-Asebu Kwamankese District specifically in seven major staple crops communities, Asebu, Amosima, Edumfa, Batanyaa, Asuansi, Pra Awusi, Abuase. The choice of these communities was because they are well noted to be the major farming communities in the district producing the major staple food crops such as maize and cassava. The purpose of selecting these communities was to explore diverse concepts, beliefs, and practices of food security, the implementation of farmers' support systems and the challenges farmers' face in accessing support systems.

Limitations

A study of this nature should have been a longitudinal study but due to resource limitations, it could not cover a lot of communities. Secondly, it is necessary to note that findings from this study cannot be generalized as responses were based on the participants' point of view, which is subjective.

Definition of Terms

The following operational definitions, as used in the text, were derived after a thorough review of literature.

Food Security

Food security is food available and accessible in sufficient quantities all year round and located at the right place at affordable prices.

Farmers' Support Systems

Strongly coordinated bottom-up approach organized for farmers by institutions to act upon their knowledge to accelerate modernization and innovation transfer to promote social and economic activities through public research, public education and extension bodies

Rural Area

An area is considered rural if the population is less than 5000. These communities have poor infrastructural network and their dominant occupation is agriculture.

Rural Agriculture

Rural agriculture is defined in terms of the production and marketing of farm produce.

Organization of the Study

The study is organized into five chapters. The first chapter, the introductory chapter, discusses the background of the study, statement of problem, research objectives and their subsequent questions directing the study. The chapter as well covers the significance of the study, its delimitations, explaining its geographical as well as the conceptual scope. The study limitations and the organization of the thesis are covered in this chapter. The second chapter presents reviewed literature on the theories and concepts as well as empirical evidence on the topic under study. The chapter concludes with a conceptual framework, which highlights the key concepts, which constitute the basis of the study and informs the analysis of the data gathered from the field.

Chapter three explained the research methods adopted for the study. To this end, the chapter discusses the research design, the study area, the study's population and sampling procedure. It also discussed the data collection instruments used, the data collection and processing procedures and analysis. The fourth chapter presented the results and discussions of findings from the field in relation to the study objectives, taking into consideration the conceptual framework outlined in the second chapter. The final chapter, which is the fifth, presents the summary, conclusions and recommendations of the study and highlights areas for further research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter is focused on a review of various related literature. The review is organized into three main sections: Theoretical underpinnings, concepts as well as empirical review. Key theoretical issues which are reviewed in the study are the entitlement and sustainable livelihood theories while the empirical review contains studies related to food security and farmers support systems. The review ends with lessons learnt which informs the conceptual framework for the study.

Theoretical Review

Several social, economic, political and environmental theories are used in addressing the issue of farmers' support systems and how it can promote food security for sustainable rural agriculture. Theorizing on food security has proceeded in a some-what linear fashion from the Malthusian analytical scenarios involving shortfalls in food availability to theories of poverty that stress entitlement failures, and eventually to livelihood frameworks that maintain entitlements as the core explanatory force (Yaro, 2004). In this study, the entitlement theory and sustainable livelihood theory are used to explain the challenges that farmers face in promoting food security. These theories have identified some attributes of farmers that need to be looked at in order to increase their capacity in food security.

Entitlement Theory

Sen (1989) cited in Frankenberger (1992) define entitlement theory as the degree and ability of a farm household to have access to food through their own production, exchange, income, gathering of wild foods, community support (claims) and assets. Similarly, Okyere et al. (1997) explain entitlement theory as people's ability to command adequate food, given the established societal procedures; including production possibilities, opportunities through trade and state allocations to avoid starvation. Yaro (2004) describes entitlement theory as taking into consideration food production, ownership of resources, the prevailing socio-economic and political conditions in the society to well-being.

The idea of entitlement theory can be traced back to the 1980s to the works of an Indian economist and philosopher, Amartya Sen, who moved the focus of food security from a short-term phenomenon to a long-term perspective. The theory has its analytical structure grounded in neoclassical general equilibrium theory which seeks to examine the conditions that are necessary to ensure an individual's set of entitlements (Sen, 1989 cited in Fine, 1997). According to Sen (1989, p. 45), "entitlements are the set of alternative commodity bundles that a person can command in society using the totality of rights and opportunities that he or she faces". Additionally, he argues that understanding of entitlements depend on the legal, political, economic and social characteristics of the society in question and a person's position in that society.

Sen and Drèze (1999) further explain that the frameworks of entitlement take explicit note of the mode of production, the structure of ownership, and the socio-economic and legal arrangements of society. Thus, to study food security,

as informed by the entitlement theory, one needs to go beyond looking at food availability to consider the general economy and also the political and social environments which make it possible for people to have access to food. Additionally, the entitlement theory emerged to consider a broader sense of food security other than production and agricultural expansion which are the concerns of the Food Availability Decline (FAD) Theory (Yaro, 2004).

The entitlements theory can be analysed using three basic conceptual categories, namely: the endowment set, the entitlement set and the entitlement mapping (Osmani, 1993). According to Osmani (1993), a person needs a set of resources known as endowments to produce food. These resources are assets such as land, labour, capital, knowledge gained from education and the person's own skills. The person's membership in a community also means other endowments such as culture and practices and the state laws. The entitlement set on the other hand refers to the products obtained from engaging the resources into production. The entitlement set usually depends on the combination of resources or the endowment set that a person chooses (Osmani, 1995). Basically, the endowment set refers to the inputs whereas the entitlement set denotes the outputs. While, the connection between the inputs and outputs is known as the entitlement mapping (Osmani, 1993; 1995). For instance, the relationship between the amount of resources employed on a farm and the output realized from cultivation. It can be noted that changes in one can affect the other. Similarly, Yaro (2004) argues that a person's endowment is the resources which are converted to produce food or which can be exchanged for food. Hence to transform these endowments into production requires knowledge, technology, skills and experience.

Sarracino (2010) has posited that, in order to satisfy one's entitlement to food, the endowments, which are mainly land, labour and capital, should be put into production or one's income in an employment that can give them access to food. This was earlier described by Sen (1999) as interdependence because people who are not directly into food production but in other sectors such as industry and services also can have access to enough food because they are able to use their incomes to command food. The idea of interdependence introduces the concept of exchange conditions which are the presence of effective supply and demand marked by certain prices (Sen, 1999). According to Yaro (2004), the entitlement approach focuses on an individual's purchasing power which gives him or her access to enough food. In the same vein, Nayak (2005, p. 56) asserts that, "food is not distributed in the economy through charity or some system of automatic sharing. The ability to acquire food has to be earned. What we have to concentrate on is not the total food supply in the economy but the entitlement that each person enjoys: the commodities over which she can establish her ownership and command".

Furthermore, Faridi and Wadoo (2006) view the issue of food security through the interplay of demand and supply. This means that the two conditions must be effective. Once food is supplied it should be demanded to boost production. Though having the purchasing power is crucial, it can be said that it is not an end in its own. The food security problem is seen as a problem with socio- economic factors of both demand and supply. Accordingly, the factors on the demand side include household income and economic assets, prices, demographic factors (number, gender and age composition of household), and socio-economic factors such as health and sanitation, education level, cultural

norms, and food consumption habits (Okyere et al. 1997). The supply side on the other hand include lack of infrastructure and insufficient access to equipment such as agricultural inputs and technology, and facilities for storing, and marketing products. In the same vein, Owusu and Abdulai (2009) postulate that, there are range of factors that affect food security, therefore there is the need to design and implement effective policies to stimulate agricultural growth and enhance food security to meet the needs of the rapidly growing population as outlined in the entitlement theory.

Daie (2010) further argues that food insecurity may also occur when there is ill health, loss of land and labour, fall in incomes, food price hikes and loss of employment. Unforeseen contingencies such as flood, bush fires and drought may cause food prices to increase leading to food insecurity. This is in conjunction with the general argument of this study that there is the need to promote support systems for farmers during unforeseen contingencies caused by climate change that leads to food insecurity. In addition, unemployment is also noted as a major cause of food insecurity under the entitlement theory. This demonstrates that even in the presence of abundant food people may not have access because of changes in their employment statuses (Fan, 2010). For example, this can be linked to seasonal crops such as maize. During off-seasons, farmers who grow only maize are unemployed and that puts them in the position to be food insecure since during that time, such farmers do not earn income which will give them access to enough and nutritious food (Nyantakyi-Frimpong, 2013).

In the view of Clack (2005), a nuanced way of viewing food security from political dimensions of this theory links food security issues to powerlessness of some group of people. This is where victims do not possess

the voices to fight for their rights. Additionally, Clack noted that the more powerful ones cause people (farmers) to be food insecure as a result of the former (state, institutions etc.) claiming more endowments. This is the situation of agricultural policy implementation outcomes by authorities in charge including harbingers in the legal, political, economic and social characteristics of the society in question. Furthermore, Keen (2008), argues on the harbingers of the entitlement theory and explained that institutions such as trade unions, political parties and nongovernmental organizations also have influence on policies which affects food security.

However, the entitlement approach, despite its broader look has been criticized for its lack of focus (Yaro, 2004). The approach is bent on general rather than specific causes of food insecurity. The approach's inability to touch on how victims of food insecurity make ends meet has been identified as a weakness (De Waal, 2015; Faridi & Wadood, 2010; Pinstrup-Andersen, 2009; Clay, 2002; Davies, 1996). Accordingly, it has been established that victims do not survive at the mercy of demand and supply (De Waal, 2003 & Davies, 1996). In Yaro 's (2004), opinion the entitlement approach tackles food security as an economic failure within a system though it leaves questions about the system itself unanswered. The entitlement approach basically studies food security based on the balance between an individual's endowment set and entitlement set which makes it problematic when trying to consider a bigger population size (Yaro). In addition, the approach's reliance on causes of food insecurity looks shallow (De Waal, 2003) since livelihood approaches goes beyond causes of food insecurity. Therefore, Davies (1996); De Waal (2003); Allison, Ellis and Freeman (2005); Chambers and Conway (2008) suggested that entitlement theory, although very important and necessary for farmers in relation to food

security may not fully underline this research. Hence, the need for a broader framework which deals with the complex network of economic, social and political as well as the historical processes which underpin farmers supports systems and how vulnerable they are in relation to food security discussions. Hence the Sustainable Livelihood theory.

The Sustainable Livelihood Theory (SLT)

Further discourses on farmers support systems and food security has led to the Sustainable Livelihood Theory (SLT) (Allison, Ellis & Freeman, 2005). The theory focuses on farmers' ability to make ends meet by converting the available assets into production to ensure a sustainable livelihood. Allison, Ellis and Freeman (2005) postulated that livelihood comprises the capabilities, assets, both material and social resources, and the activities required for a means of living. For example, a household that owns a large plot of land relative to the amount of labour will be expected to engage in cultivation. Furthermore, Chambers and Conway (2008) assert that a livelihood's sustainability depends on how it is able to utilize the available assets and resources while at the same time preserving them for further usage in the future. Scoones (2009) on the other hand argues that, households are pushed into a livelihood dependent on the amount and the kind of resources (physical, natural, human, social and financial) readily available to them and the degree to which they are able to access these resources. Djurfeldt (2012) argues that there is a need to increase access to assets, as household assets are the major determinants of farmers' ability to participate in agricultural production and markets and to secure sustainable livelihoods through subsistence agriculture.

Furthermore, Allison, Ellis and Freeman (2005) proposed that, the sustainable livelihood theory is associated with some factors responsible for the need of farmers support systems to ensure food security. These factors include how a livelihood is susceptible to shocks (like crop failure and natural hazards), seasonality (like seasonality in price and production) trends, (like population growth, resource stock trends, and government administration outside the control of farm household and stakeholders) as well as coping strategies which all combined make farmers vulnerable. Vulnerability contexts like seasonality and trends may affect the livelihood conditions either negatively or positively. Livelihood is therefore vulnerable when it is easily exposed to unforeseen contingencies with little efforts to recover. Livelihood assets of farmers include physical capital, social capital, financial capital, human capital, and natural capital (Ashley & Carney, 1999).

Moser (1996) and Farrington, Carney, Ashley and Turton (2002) on the other hand, noted that an individual household or community may become vulnerable as a result of economic, political and ecological changes. Additionally, Lay and Schuler (2008) also identifies the following as causes of vulnerability: changes in the assets and natural resources of a community, changes in prices, production and employment opportunities, migration, illness or disease, natural disaster and conflict. These may also lead to changes in peoples' food security statuses. A person who is more vulnerable to shocks is more likely to be food unsecured. According to Chamberlin and Jayne (2013), farmers are easily exposed to unforeseen contingencies such as shocks in the

form of crop failures, post-harvest losses, natural disaster making them highly vulnerable to food insecurity. This may also negatively affect the degree of access to other ways of settling and coping with shocks and risks (Ellis & Freeman, 2004). Thus, the need for effective strategic plans to ensure effective policies to deal with shocks and risks factors that affect the needs of farmers and food security in order to reduce vulnerability.

Another determinant for available food security support systems is the existence of seasonality. The concept of seasonality indicates that income flows and consumption of the farm household are not parallel and mostly they are mismatched. Therefore, due to these income flow-consumption discrepancies, livelihood tends to be vulnerable when there is emergence of price and production fluctuations (Djurfeldt, 2012). In addition, Ayerakwa (2017) argues that seasonality leads to discrepancy in the return of labour across seasons during the year in on-farm and non- farm activities in the labour market. This destabilize the flow of income in the farm household livelihoods which affect sustainable agricultural development. Thus, empowering farmers with political, economic and social capital to contribute to decisions which affect their livelihoods.

Additionally, some studies found market access as a key determinant of farmers support systems (Barrett & Srivastava, 2017; Chamberlin & Jayne, 2013; Vorley, Cotula & Chan 2012). The authors further argued that, those with access to adequate assets and infrastructure and faced with appropriate incentives engage actively in markets, while those who lack one or more of those three essential ingredients largely do not. Similarly, Dzadze, Mensah, Aidoo and Nurah (2012) assert that proximity to markets provides opportunities

to sell output, and purchase inputs, from self-employment activities as well as opportunities for non-farm wage employment. Brunori, Knickel, Rand and Proost (2009) further debate that farmers with superior access to urban markets and those involved in contract farming schemes with processing plants or exporters are better able to overcome factor market constraints to produce for market. Subsequently, Sikwela and Fuyane (2013) argued that, opportunities available for farm households to engage in higher nonfarm income activities that can lead to accumulation seem to be more available in areas with better endowments in terms of agricultural potential, market access, proximity to urban centers and better infrastructure such as roads.

One other important determinant of farmers support systems and food security is trends such as population growth. Population growth is observed as one of the factors that affects food security. According to Malthusian theory, increasing population growth affects food security hence adequate food supply for population growth leads to adequate food security (Multhus cited in Sarracino, 2010). Smilarly, Todaro and Smith (2012) further argue that when food cannot match population expansion food insecurity conditions sets in. This is because while human population grows at geometric rate, land and food supplies increase at an arithmetic rate. Therefore, it would be useful for the current study to consider population growth and food security support systems since other socio-demographic dynamics such as the age, sex, household size and education of farm household livelihoods has a relationship with the existence of food insecurity (Sarracino, 2010).

From the forgone discussions, it can be argued that Sustainable livelihood framework serves as a tool to enhance the understanding of the livelihood of farmers as expound by Ashley and Carney, (1999); Yaro, (2004);

Sarracino, (2010); Ayerakwa, (2017). Accordingly, Farrington, Carney, Ashley and Turton (2002), postulate SLF as an analytical structure to interpret the complex livelihood systems that mainly include assets, activities, institutions and outcomes that help in aggregate to improve livelihood conditions of farmers. Hence, Yaro, 2004 affirmed that one could implement sustainable livelihood framework at various levels and scales starting from individual and household level even to national level. This is so because the sustainable livelihood framework results can be assessed at various scales and levels.

Therefore, SLF is relevant to this study since it explains how farm livelihood strategies can give rise to positive livelihood outcomes if poor farm households can generate higher income, improve their well-being, increase food security, decline vulnerability, and improve sustainable use of the environment resource bases due to farmers support systems (Yaro 2004; Sarracino, 2010).

Review of Concepts

Food security

Food security is a complex concept as reflected in the many attempts at definitions in research and policy usage. The continuing evolution of food security as an operational concept in public policy has reflected a wider recognition of the complexities of the technical and policy issues involved (Clay, 2002).

The concept of food security came to the fore in the mid-1970s, as a result of the world food crisis which witnessed unprecedented increases in the international trading prices of staple (Allen, 1999). During this period, the focus of the debate was on strengthening food production to increase availability and

stability of global food supplies of basic foodstuffs, most especially cereals, to meet growing demands (Mechlem, 2004). Such demands were caused by population growth and the occurrence of a drought across many major grain-producing countries particularly in the developing regions that resulted in heavy demands on international grain markets (Clover, 2003). However, the 1980s, saw a shift in the original thinking of food security away from food availability at the national or global level to access at household and individual level (Webb et al., 2006).

According to Maxwell and Frankenberger (1992), Sen's (1989) theory on food entitlement had a considerable influence on this change in thinking, representing a paradigm shift in the way that food insecurity and famines were conceptualized. Food entitlements of a farmer household derive from their own production, income, gathering of wild foods, community support (claims), assets, migration, etc. Thus, a number of socio-economic variables has an influence on a farmer household's access to food. In addition, growing food insecurity was viewed as an evolving process where the victims were not passive to its effects. Social anthropologists observed that vulnerable populations exhibited a sequence of responses to economic stress, giving recognition to the importance of behavioural responses and coping mechanisms in food crises (Maxwell & Frankenberger 1992 cited in Frankenberger, 2000). Since then, the term has been introduced, evolved, developed and diversified in various ways by different researchers.

Definitions of Food Security

Food security has been defined by various organisations and researchers with diverse forms and interest. The World Bank (1986) defined food security

as access by all people at all times to enough food for an active and healthy life (World Bank 1986 cited in Quaye, 2008). Furthermore, World Bank (2002) described food security as the state of having secure and sustainable access to sufficient food for an active and healthy life. Additionally, Baldwin (2006) assert food security and insecurity as terms used to describe whether or not people have access to sufficient quantity and quality of food. In the view of Maharjan and Khatri-Chhetri (2006), food security is widely considered as all people at all times have access to enough food for an active life, while food insecurity is the inability of a household or individual to meet required consumption levels in the face of fluctuating production, prices and incomes.

Yaro (2004) defines food security as having secure available and access by households and individuals to nutritionally adequate food at all times and procured in conformity with human aspirations and dignity. Added to this, the Economic Commission for Africa [ECA] (2009) also describe food security as the ability of households, communities and the state to mobilize sufficient food, through production, acquisition and distribution, on a sustainable basis. In furtherance, Schmidhuber and Tubiello, (2009) argue that food security is not merely defined whether food is available, but also whether the monetary and nonmonetary resources at the disposal of the population are sufficient to allow everyone access to adequate quantities of food. Baltzer (2011) argued that food security is not simply having sufficient and adequate quantities of our various staple foodstuffs but it also encompasses access to the entire citizenry to these food items at affordable prices. Similarly, in Ghana food security is understood as "good quality nutritious food, hygienically packaged and attractively presented, available in sufficient quantities all year round and located at the

appropriate places at affordable prices" (MOFA, 2007, p.24). At the household level, food security is defined as sustainable access to food of sufficient quantity and quality to ensure adequate dietary intake and a healthy life for all household members (Mallick & Rafi, 2010).

According to the IFAD, household food security is captured as 'the capacity of households to procure a stable and sustainable basket of adequate food' (IFAD, 1996 cited De Waal & Tumushabe, 2003). Sultana and Kiani, (2007 p. 60) also opine that, "a household is food secure when it has access to food needed for a healthy life for all its members and when it is not undue risk of losing such access". Pinstrup-Andersen (2009) on the other hand explains two reasons why household food security may not guarantee food security for all household members. Firstly, the ability to obtain enough food may not be transformed into actual food procurement. Secondly, the intra household allocation of the food may not be based on the needs of every member of the household. He also noted that accessibility to food may be influenced by factors such as income levels, population growth, infrastructure, lifestyles and preferences, and human resource development.

Dimension of Food Security

According to FAO et al. (2015), the conceptualization of food security is commonly conceived to encompass four key dimensions of food supplies namely availability, accessibility, utilization and stability. Food availability is the first element of food security. It refers to the overall ability of the agricultural system to meet demand for food. This can also be viewed as the ability to balance population growth with food production. It is also the level at which

there can be an adequate quality and quantity of food that is physically available in a given belt.

The second element of food security is access to food. Access to food is the ability of individuals to acquire adequate resources in order to procure appropriate foods for nutritious diets. This is because even when there is food, people may not have the means of procuring these foods. Thus, food access can also be achieved when communities, individuals and households have the resources to produce foods at home, purchase from markets or stocks, borrow, barter trade or even have access to food gifts and aids. It includes physical access to food in adequate supply as well as an efficient distribution system, including storage, preservation, transportation, marketing and processing. It also entails economic access to food, which refers to the ability of individuals, households or communities to establish entitlements over a requisite amount of food. Thus, in the case of a farmer for example, these entitlements are the means of food production, labor and land. A diminishing land or labor entitlement consequently affects prices of food and in turn, household or individual food security. On the other hand, for the non-farmer, entitlements are seen in a ratio of incomes and prices. Therefore, how much food costs and the amount of money they have to enable them buy the food available is core to the assessment of accessibility to food. An increase in prices and a decrease in income can also affect household or individual food security.

The third element of food security is utilization. This entails the food safety and the quality of food in order to provide good nutrition. Food utilization also refers to as how the body makes use of the various food nutrients received. For food utilization to occur, the individual needs to be in good health. For

example, people with chronic conditions such as HIV or those malnourished, especially children, lack the ability to utilize food. Food stability is the forth element of food security. The relationship between individuals who are at high risk of temporarily or permanently losing their access to resources needed to acquire adequate food, either because these individuals are unable to ensure beforehand income shocks or they lack enough reserves to ensure smooth consumption in the aftermath of such occurrences. An individual may have adequate food consumption in a day, but would be food insecure if he or she has inadequate access to food periodically which in turn distorts an individual's nutritional status. To ensure food stability all the other three elements outlined above are prerequisite.

Food security has several dimensions which present different challenges when viewed at the regional, national or household perspective. The official definition given by the FAO has been widely accepted. It draws attention tothe larger underpinning food insecurity in developing countries. This is because it projects the wider social, economic and political factors that increase the risk of food insecurity, it also emphasizes the relationship between poverty and malnutrition. For instance, agriculture continues to be the mainstay economic activity of many developing countries, yet small scale farmers have less or no influence on agriculture or food related policies. They also lack adequate resources for agriculture, such as land, fresh water, fisheries and forest lands. Food security, however, as defined by FAO, could also provide a useful means for monitoring an important aspect of the well-being of households and for the design, implementation, and evaluation of policies, programs and projects.

Importance of Food Security

The issue of food security is of key significance of every economy in the world being it developed or developing. FAO (2015) noted that food security is beneficial for all either at or below the poverty line. This is because food security leads to better productivity, which in turn ensures steady economic growth for sustainable livelihoods. In Ghana, for instance the national policies and strategies to sustain food security at a high level have concentrated on increasing domestic production and improving the post-harvest food management including setting up buffer stocks of cereals (MoFA, 2002).

World Health Organisation [WHO] (2000) asserts that, food security can promote special concern for getting healthy and nutritious food into nations where hunger and malnutrition are present, thereby improving individual health in underserved neighborhoods. In addition, food security helps to maintain political stability, and ensures peaceful coexistence among people while food insecurity results in poor health and reduced performance of both children and adult (Jensen, 2002). In support of this view, Harvey (2005) expanded that food security initiatives focus on viable short and long-term strategies that can make healthy, nutritious, and affordable food access to an entire nation to achieve sustainable growth.

Similarly, authors such as Madziakapita (2009); Ruel, Deitchler and Arimond (2010) have argued that food security in some cases can help to reduce high levels of poverty and chronic malnutrition which has an effect on human capital development which is vital to achieve sustainable growth. In view of this, governments invest significant resources and make multi-sectoral policies aimed at reducing inequalities and vulnerable populations to ensure their welfare and progress (Burchi & De Muro, 2012). Torero (2014) assert that food

security not only carries significant benefits for human health, but also serves as the basis to achieve sustained economic growth. For this reason, it is essential that food security strategy is seen as more than one single sector issue; since it involves a combination of coordinated actions in various sectors including finance, agriculture, health and nutrition, infrastructure, among others for economic growth and development.

National Food Security Policies and Strategies in Ghana

Food security policies and strategies has been a core issue for successive- governments in Ghana. Nevertheless, a major turn-around in the national food security policies and strategies in Ghana started form 2002. The government through the Ministry of Food and Agriculture (MoFA) introduced a 'Food and Agriculture Sector Development Policy' (FASDEP I) as an overall policy for the agriculture sector. FASDEP I, which was implemented in 2003, represents the first major coherent and sector wide agriculture policy in the post-independence era. On the back of the increased economic recession and financial crisis, the country opted to adopt the Highly Indebted Poor Countries (HIPC) program of the World Bank and IMF. The country's Interim Poverty Reduction Strategy Paper (I-PRSP) subsequently became the Growth and Poverty Reduction Strategy (GPRS) (2003–2005). This resulted in the formulation of a broad national development framework, the Ghana Poverty Reduction Strategy (GPRS I) from 2002 to 2004. This pro-poor economic policy framework was predicated on the role of agriculture.

FASDEP I was developed to provide the framework that stimulate the national vision of moving Ghana to become an agro–industrial economy by the

year 2010 (Government of Ghana [GoG], 2005). It was meant to provide a framework for modernizing the agricultural sector and making the sector a catalyst for rural transformation and poverty reduction in line with the goal set for the sector in the Ghana Poverty Reduction Strategy (GPRS I) (MoFA 2007). The objectives of FASDEP I included to improve food security to facilitate;

i. production of agricultural raw material for industry
ii. production of agricultural commodities for export
iii. effective and efficient input supply and distribution system
iv. effective and efficient output processing and marketing systems
v. facilitate and coordinate the implementation and monitoring of sector policies and programmes (GoG, 2005).

FASDEP I objectives broadly operated under Pillar 2 of the GPRS I: modernisation of agriculture based on rural development. This pillar focused specifically on reforming the land tenure system; assisting the private sector to increase food production through facilitating extension, research and financial services, and irrigation facilities; encouraging cash crop production; and supporting the private sector to add value to traditional crops (GoG, 2005). The main difference between FASDEP I and previous policies was that the former adopted a sector wide approach to agricultural development, in contrast with the discrete project approach engaged in the past (Brooks, Croppenstedt, & Aggrey-Fynn, 2007).

However, the FASDEP I was faced with several challenges. A poverty and social impact analysis (PSIA) of FASDEP I conducted in 2004, concluded that the policies would not be able to achieve the desired impact for instant poverty reduction because it is incapable of addressing the needs of different stakeholders in the agricultural sector, particularly the very poor (smallholder

farmers) (Brooks, Croppenstedt & Aggrey-fynn, 2007). This led to the revision of FASDEP I.

The FASDEP II as the revised version of first policy (FASDEP I) was formulated in 2007 and also in line with the policy objectives of Ghana's Poverty Reduction Strategy (GPRS II) as well as sub-regional (ECOWAP), regional (Comprehensive Africa Agriculture Development Programme (CAADP of NEPAD) and global (MDGs) development programmes. The FASDEP II had six main objectives, which focused on; food security and emergency preparedness, improved growth in incomes, increased competitiveness and enhanced integration into domestic and international markets, sustainable management of resources such as land and the environment, improved science and technology applied in food and agricultural development and improved institutional coordination (MoFA, 2007).

The overarching objectives of FASDEP II were to ensure modernised agriculture, a structurally transformed economy, food security, employment and reduced poverty (MoFA, 2007). These distinguish the second phase of the agricultural policy from the previous phase. The major difference between FASDEP I and II has do with the approach that led to the formulation of the policy.

According to Kolavalli, Salifu and Francesconi (2010), while FASDEP I had little participation of stakeholders that contribute to the agricultural sector, FASDEP II engaged increased and diverse number of stakeholders, including farmers, researchers, District Assemblies, input dealers, traders, and non-governmental organisations (NGOs) through regional consultations. This discussion confirms the argument of this study that agricultural policies have failed to enhance food security among smallholder farmers because less

attention was paid to them. The policy objective of modernising agriculture was overly ambitious and failed to take into consideration that production systems and technology are mainly traditional, based on intercropping and use of simple implements and hand tools, with little use of modern inputs such as improved varieties and fertilizers and other agrochemicals (Kolavalli, Salifu & Francesconi).

Further situating the current agricultural policies within the context of the Oxfam model (2009), these polices have failed to address the key underlying factors confronting smallholder farmers in northern and southern Ghana such as Inadequate storage facilities, Inadequate secured land tenure, Inadequate extension services, Inadequate credit and capital and inadequate infrastructure such as transportation, and markets. Due to the fact that attention has been paid to promoting large scale commercial sector production rather than the smallholder agriculture sector. For instance, a study by the WFP found that although 88 percent of households in Ghana depend on crop cultivation as one of their primary sources of income generation, other structural challenges such as lack of irrigation, limited size of land, inadequate rural employment opportunities, migration of rural labour to the south, poor fertility of soils and fluctuation in food prices (due to decrease in food production and the continuing increase in inflation) have continued to trap the populations in chronic food insecurity (WFP, 2012).

Food security and Sustainable Agricultural Development

Brundtland and Khalid (1987) defines sustainable development as the development that serves the needs of today's generation and does not place possibilities for their usage by future generations under threat. This takes note of strong support for agricultural production and social development with keen interest to food security and simultaneously takes the notion of protecting the natural capital of the environment. Costanza, Rochstrom, Steffen, Noone, Persson, Chapin and Schellnhuber (2009) argued that for a sustainable economy, one must respect the economic development with regard the earth's boundaries, recognize the interrelationship between wealth and natural resource existence.

Agricultural production is part of wealth creation for economic development; this implies that care must be taken to look at the way the ecosystem is affected by the ability to reach higher agriculture productivity. There are 3 fundamental principles of Sustainable development, and they are explained by World Bank (2016) as social, economic and environmental. The social aspects concentrate on an equal representation of both sexes with the availability of funds as well as maintaining cultural practices that are good enhances agriculture production. Economic deals with services, household needs, agricultural growth, efficient use of labor. This adds more impetus on agricultural production such as financing, provision of agricultural extension officers, etc. to aid food security. While environment on the other hand focus on biodiversity, natural resources, carrying capacity, ecosystem integrity, clean air, and water. This is key to taking agricultural production and food security into the foreseeable future for generations to come. Hence, considering rural

development, the need for this study to explore how farmers' support systems promote food security to ensure sustainable rural agricultural development.

Farmers Support Systems

There are various definitions which describe who a farmer is stirs from social, economic and environmental dimensions. According to Bernstein (2013), farmers are seen as those who plough and plant for agricultural purposes to enhance sustainable livelihood. Furthermore, Bernstein argued that farmers are key players involved in agricultural activities. Similarly, Effah-Abedi (2014) asserts that the agriculture sector in the world is dominated by farmers who play a major significant role in ensuring food security. He further described the domination of farmers in developing countries especially those in SSA and explained their economy as an agrarian economy since the main use of land as a resource is for agricultural purposes.

According to Barrett, Reardon and Webb (2001), agriculture is the economic backbone of most rural areas in developing countries. Depending on a country's level of advancement in the economic sphere, agriculture contributes to overall economic growth by creating jobs, supplying labour, food, and raw materials to other growing sectors of the economy; and helping to generate foreign exchange. The agriculture sector in Ghana categorized into commercial farming, small-scale farming and subsistence farming.

Nevertheless, this sector is dominated by smallholder and subsistence farmers and mostly dependent on rainfall (Aliber & Hall, 2010). Accordingly, Antwi-Agyei, Fraser, Dougill, Stringer and Simelton (2012) define smallholder farmers as those that derive benefits from primary agriculture. These categories of smallholder farmers produce mainly to generate an income and their own

consumption. Additionally, Louw, Troskie and Geyser (2013) describe smallholder farmers as those who usually consider a major source of income for households which with family labour and simple farm tools to grow crops, rear animals and practice fish farming. For instance, in Ghana, MoFA (2011) argue that mostly rural smallholder farmers produce about 80 percent of the of the country food consumed using rudimentary tools such as hoe and cutlass.

According to IFAD (2012), rural smallholder farmers in Ghana have limited access to the assets that would facilitate a shift from low-productivity subsistence farming to commercial agriculture. They further added that major challenges that confront rural smallholder farmers include inadequate infrastructure and insufficient access to equipment such as agricultural inputs and technology and facilities for storing, and marketing products. These challenges indeed pose themselves as threat to the livelihood of these farmers. Hence the need for farmers support systems to enhance sustainable rural agricultural development is critical.

Farmers' support systems have been defined in several ways by different institutions and scholars. In the view of the FAO (2013), farmers support system is an approach designed as a broad-based agricultural development strategy that is crucial in the effort to increase incomes, employment opportunities, and export earnings of farmers with the notion of ensuring food security. Additionally, DBSA (2002) cited by Yeni (2013) argue that farmers support systems as complementary, coordinated and timely services to the broad mass of farmers that have the potential to improve the overall utilization and efficiency of agricultural resources.

Additionally, in defining farmers support systems, Yeni adopts the understanding of farm household livelihoods and how a conducive center of production affects their livelihood activities. Furthermore, Brunori, Knickel, Rand and Proost (2009) explain farmers support systems as strongly coordinated bottom-up approach organized for farmers to act upon their knowledge to accelerate modernization and innovation transfer to promote social and economic activities through public research, public education and extension bodies.

MoFA (2011) also contends that, in the process of ensuring food security in a country; focus on providing farmers with various support systems should capture both production and supply aspect of food by farmers in order to ensure effective measures to support them to promote food security and sustainable growth. They delineate farmers' support systems as providing of farmers with technical, system related and institutional capacity building allowing for more efficient utilization of agricultural resources, with an associated increase in economic activities and income levels. In this regard, the study seeks to explore various support systems that capture both production and supply aspects of food by farmers in order to ensure effective measures to increase incomes, and earnings, that support them to promote food security and sustainable rural development. In Ghana, there are various farmers support programmes such as Fertilizer and Seed Subsidy Programme, West African Agricultural Productivity Programme (WAAPP), Strengthening Innovations and Technology Dissemination for Sustainable development (SATTIFS) among others to support agricultural activities and sustain livelihoods (MoFA, 2011). The SATTIFS project is geared towards strengthening innovations and technology dissemination on maize and cocoa value chains. While, Fertilizer and Seed

Subsidy Programme, other hand focus on reducing low fertility and low farm yield for small scale farmers through access to fertilizers and seedlings at subsidized cost. WAAPP also aims to transform agriculture through the development, dissemination and use of improved agricultural technologies. These agricultural support programmes have been laid out to support farmers with the aim of positively impacting their well-being and enhancing food security to promote economic growth in the country (MoFA, 2011).

Importance of Farmers Support Systems to Food Security

The capacity to support smallholder farmers involves a number of support services that are required to enhance the competitiveness and viability of smallholder farmers (Hall & Aliber, 2010). These include the basic agricultural support services, such as access to production inputs, research and extension, infrastructure and markets that should be provided as a package to poor farmers. Vink and van Rooyen (2009) also observed that there is prime evidence that in Africa, key agricultural organisations research, extension, training, finance, marketing and land reform are currently not functioning as a well-organized system. These prime movers need to be developed as a package, because international experience has shown that no single factor is sufficient to get agriculture moving (Dennison, Dennison, Ward & Wu, 2010).

In furtherance, to develop these prime movers, SSA countries need to invest in human capital, agricultural research, biological capital formation, and rural institutions (Eicher & Staatz, 2010). Smallholder farmers must gain access to farmer support services and reliable markets to ensure that smallholder farming is profitable and contributes to economic growth. Hence, in Ghana improving rural farmers access to support services may require that agricultural

service institutions be transformed so that they can provide good-quality services to rural farmers. Structurally these support services are required to be well coordinated and integrated to achieve maximum benefit to smallholder farmers. Some of these services to farmers include:

i. Institutional innovation in rural financial markets, particularly in market-assisted land reforms
ii. Facilitating access to credit, technology, financial and farm management skills and marketing information
iii. Facilitating linkages with the private sector
iv. Ensuring sustainable support mechanism for new and established farmers (including land reform beneficiaries and farm workers)
v. Measuring the impact of interventions as delivered by the programme
vi. Leveraging investment from the private sector and commodity groupings
vii. Ensuring quality and standards of service and advice to farmers
viii. Ensuring that the programme assisted municipalities and other government departments with the implementation of projects aimed at alleviating poverty in rural communities in developing countries.

Oxfam (2009) argue that food security can best be achieved if the agricultural policy (or the policy framework) contains measures directly aimed at strengthening the capacities of small farmers, particularly women. Oxfam believes that such measures enhance the role of the small-scale farmer in agricultural production by empowering and insulating them against discrimination, at the same time enabling them to improve their livelihoods as well as increase their food supplies, raise rural employment, purchasing power

and foster more sustainable agricultural practices. As Oxfam noted "supporting small-scale farmers is an important means to achieving more equitable poverty reduction, narrowing rural disparities and ensuring more broad-based rural growth. Small farms can also play a critical role in the preservation of environmental goods, in particular sustaining crop genetic diversity (which may well have implications for food security in the long-run)" (Oxfam International Research Report, 2009, p.13).

This idea put forward by Oxfam suggest that food security cannot be meaningfully achieved when agriculture interventions turn to ignore or neglect the smallholder producers who constitute the dominant producers in many parts of the developing world. For instance, according to IFAD (2013), there are an estimated 500 million small farms in the developing world and these small farms provide about 80 percent of the food consumed in sub-Saharan Africa and Asia. Hence, any agricultural policy intervention seeking to promote agricultural production and raise rural income to reduce poverty must incorporate the needs of smallholder farmers. Within the idea therefore Oxfam has prescribed seven critical elements that needs to be incorporated in agricultural policy frameworks or interventions geared towards smallholder agricultural development and food security.

Ensuring smallholder access to land and other productive assets as the idea considered is necessary in any agricultural policy geared towards food security in view of the fact that it helps to enhance productivity and strengthen local land rights as well promote investment in sustainable management among smallholder producers (Oxfam, 2009). For example, as noted by Selim (2014, p. 1089) "without the security of land tenure, (smallholder farmers particular)

women are also less likely to experiment with innovative farming methods and technologies (a problem compounded by their inability to access lending services". Also, the ECA (2009, p.12) noted "land offers a wedge for the poor to mobilize their own power to chart their development destiny, and any attempt to mitigate poverty ought to be centered on the reinforcement of rights and opportunities arising from land and agriculture". For instance, a recent study by FAO showed that if smallholders particularly women farmers had the same opportunities of access to productive resources such as (land, and credit) as men, they could raise yields by 20-30 percent (Martínez-García, Dorward & Rehman, 2013).

Similarly, Organisation of Economic Commission Development [OECD], (2010) noted that the lack of ownership of land and access to credit suffered by women smallholder farmers directly affect the wellbeing of their families. The number of malnourished children is 60 percent higher when there is no ownership of land. And when there is no access to credit, it increases to 85 percent (OECD, 2010). Furthermore, another important element as the Oxfam idea prescribed is promoting of physical infrastructure in rural areas (such as roads, irrigation and market facilities). Oxfam beliefs such measures help to enhance productivity of smallholder producers because majority of these people live in rural areas where these facilities are often poorly developed. As Vorley, Cotula and Chan (2012, p. 12) have noted "a lack of appropriate policy and physical infrastructure would tend to favour large-over small-scale farming by raising the cost of procuring produce from multiple scattered smallholdings, and would increase the likelihood that investors will prefer in-house production on land they own or lease themselves".

FAO et al. (2015, p. 18) noted that "for smallholders, limited access to markets increases their vulnerability to shocks and hinders economic opportunities that could arise if trade was easily available". Mbise et al. (2010) argued that, the size of transaction costs could also affect the decision of farmers on how much quantity to supply to the market. This was discovered in the study of Mugisha, Bwalya and Hyuha (2013) that in Tanzania, small holder farmers only contribute 20 to 30 percent of marketable surplus. The low rate of supply and market participation can be attributed to high transaction costs faced by smallholder farmers in accessing adequate and timely markets as well as fair prices (Maziku, Hella & Makindara, 2015).

Determinants of Farmers' Support Systems and Food Security

Some studies mentioned that the major determinants of farmers' support systems and food security in developing countries include farmer household income and economic assets, prices, demographic factors (number, gender and age composition of farmers, years of experience) and socio-economic factors like infrastructure and access to equipment such as agricultural inputs and technology, and facilities for storing, and marketing products (Okyere et al. (1997); (Owusu & Abdulai, 2009); Zimmermann et al. (2009).

The farmers' support systems and food security determinant factors can be grouped broadly into household characteristics, socioeconomic characteristics, market characteristics and asset endowments. The empirical determinant factors for farmers support systems and food security may also vary from country to country or there may even be variations among individual farm households. The variations of the determinant factors may be also extended between developed and least developed countries' farmer households.

In least developed countries, insurance and credit markets are missing, and if they exist, they concentrate on low-risk rather than high-risk (but higher return) activities. As a result, farmer households demand to have access to support systems in their activities to fill this market gaps (Holden & Binswanger, 2010). Income generated from participating in farming activities accounts for a significant share in developing nation's farm households (Bezabih, Di Falco & Yesuf, 2010).

Constraints of Smallholder Farmers to Enhance Food security

Despite the significant role farmers have played in the agriculture sector in the development of countries for years, there are aggregated key challenges. These challenges hinder smallholder farmers in developing countries especially in Ghana in the contribution of food security measures, poverty reduction strategies and economic growth. Some of these factors include limited access to irregular and unreliable rainfall, persistent drought and floods, high post-harvest losses, inadequate storage facilities, environmental degradation, changes in technology, low level of education, lack of markets and existence of poor infrastructure.

According to the 2007 FASDEP II, poor infrastructure and inadequate access to market are the two major factors hampering food security in Ghana (MoFA, 2007). Armah, Odoi, Yengoh, Obiri, Yawson & Afrifa (2011) addthat some of the critical issues faced by farmers which constrain their ability to achieve food security include inaccessible roads and annual wildfires, inadequate irrigation facilities, erratic rainfall pattern, low soil fertility, and difficulty in accessing credit. A study by WFP (2009) documented limited household resources, poor agricultural production, ineffective transport system,

natural hazards such as drought and floods, inadequate access to credit and markets, and widespread poverty as main the contributors to food insecurity in Ghana.

A survey in 2009 revealed that only 20 percent of farmers regularly used fertilizers on their crops (WFP, 2009). Also, due to income poverty most food producers are unable to acquire the needed storage and drying facilities that would allow them to store their produce to sell at favorable times of the year (i.e. during the lean or non-harvest when prices are high) (WFP). Other studies such as WFP (2009) and World Bank (2008) in Nata, Mjelde and Boadu (2014) attribute ineffective production techniques, inadequate extension access, and limited input supplies as causes of food insecurity. Furthermore, IFAD (2012) reported that smallholder agriculture in Ghana is characterized by subsistence production and faced inadequate access to productive assets, information and skills, low adoption of modern technologies and mechanization, small farm sizes, and limited access to water for agriculture. Antwi-Agyei et al. (2012) report that majority of the people in Ghana practice subsistence agriculture and are largelydependent on rainfall which makes them more vulnerable to climate variability.

Low agricultural production has also been considered as the main cause of persistently high levels of poverty and food insecurity in Ghana (Barnett & Srivastava, 2017; WFP, FAO & IFAD, 2012). Also, smallholder farmers lack adequate access to credit facilities to procure inputs, as a result, they continue to cultivate and plant small land parcels less than 1 hectare with family labour and using rudimentary tools such as the hand hoe and cutlass (SEND-GHANA, 2010).

Lack of irrigation is a further constraint on agricultural production and food security. In many parts of the Ghana, irrigation systems are generally limited. For instance, it is estimated that less than two percent of the total cultivatable area in Ghana is irrigated (Namara et al., 2011). According to a study by the SEND Foundation (2010), only 19.7 percent of smallholder farmers have access to public irrigation schemes and 60 percent of these farmers engage on non-mechanized small irrigation techniques. The lack of irrigation development is attributed to factors such as erratic and insufficient rainfall, poor credit services, high initial and operational cost, low level technology among smallholder farmers, and insufficient government support and extension services (Namara et al., 2011). Additionally, pre and post-harvest food losses also hinder food availability. For instance, due to lack of knowledge in post-harvest management, especially of perishable produce, it is estimated that post-harvest losses range from about 20 percent-50 percent for fruits, vegetables, roots and tubers, and about 20 percent-30 percent for cereals and legumes (MoFA, 2007).

Poor rural infrastructure, including roads also hinder agriculture production. Most feeder roads linking farms to villages in developing countries are very poor compelling smallholder farmers especially women farmers to carry their farm produce on their heads to markets (Effah-Abedi, 2014). Also, the poor condition of many rural roads and the ineffectiveness of vehicles plying these roads contribute greatly to high transport charges. Many of the roads are not motorable or useable during the rainy season and this compels many farmers to sell their produce before the rains start.

The globalization of food systems exposes smallholders to unpredictable price fluctuations. The local impacts of such shocks vary depending on the crops grown, level of specialization, patterns of household food consumption, existence of functioning safety nets, and national trade policies (Fleming, Abler, & Goetz, 2010; Godfray, Beddington, Crute, Haddad, Lawrence, Muir & Toulmin 2010; Swinnen, 2010). Smallholders often cannot afford to wait for the best price or look for more profitable markets for their produce. The need for immediate cash (e.g. for school fees) may lead people to sell produce (and even productive assets) at low prices, thereby pushing them into poverty or preventing them from escaping poverty or poverty traps (Deaton, 1999). At the same time, producers with the least resources (land, household labour, etc.) face challenges in investing in productivity enhancing measures to take advantage of higher prices FAO et al. (2011) and can't afford expensive, imported foods when harvests fail due to drought, pests and the like.

Post-harvest losses reduce income, but also affect reserves and thus food security, resilience and the ability to take advantage of better prices for products. Rural infrastructure also plays a crucial role in ensuring access to markets and in controlling prices. There is no point in increasing productivity for the market without the means to bring the products to that market. Furthermore, many smallholders lack physical and economic access to lucrative markets for their crops. Distance to market, poor roads, and access to only bicycles or motorbikes for crop transport, cause physical isolation. Small quantities of crop to sell, a need for immediate payment, no capacity to safely store crops, and limited knowledge of prices and quality requirements beyond the farm gate are economic constraints. As a result, most smallholders sell their crops on the roadside near their farms. In this situation, their power to negotiate with buyers

is very limited. In addition, there are also limited marketing skills, limited processing and product development for good utilization of raw materials and mostly weak commodity value chains (MoFA, 2007).

Last but not least, many smallholders have little formal education, which limits their ability to keep adequate written records or educate themselves about improved agricultural practices. They may have only a vague idea of basic metrics, such as farm size, crop yield, and real costs, on their own farms. Also, the population of smallholder farmers is aging. With alternative economic opportunities available to youth in urban areas, farming has lost its appeal among the youth.

Empirical Review

In addition to theories espoused by scholars, many empirical studies illustrate the efficiencies and deficiencies visualized within the farmer support systems and food security. A number of studies have identified the various support systems such as extension access, credit facilities, available market, infrastructure and improved technology for promoting food security.

Miller, Phillips, Foley, Barnard and Isenring (2010) studied the effect of improved maize germplasm in SSA region to enhance smallholder production systems. It was revealed that availability of improved seed in SSA was particularly poor. The authors further revealed that improved seeds were developed mainly to meet the requirements of larger farmers, neglecting smallholders. It was discovered that most local maize grown create a yield gap due to lack of water, lack or imbalance of nutrients, pest damage, weed competition and lack of pollination. The study further suggested the need to develop strategies for smallholder farmers to close the yield gab through

subsidized inputs such as developing and distributing more-resilient seeds, fertilizers and pesticides to facilitate food security. It was concluded that a comprehensive development plan on food security, including increasing the opportunity to improve smallholder farming productivity was most urgent.

A study conducted in the state of North Kanudu by Swiderska, Argumedo, Pimbert, Song and Pant (2011), aimed to examine farmer livelihood vulnerabilities and food security. In all 50 households were selected randomly in probability proportionate to major livelihood groups in the study villages. The multiple regression analysis carried out on the determinant factors that affect farmer livelihood and food security was educational level, social status, training, asset position, access to credit, rural infrastructure, agro-climatic condition and the overall level of economic development of a region. The study also showed that several constraints act as obstacles to farmer livelihood differ across regions and livelihood groups. The resource-poor were particularly vulnerable because of the entry barriers imposed by their weak asset base.

The study revealed the main constraints faced by the households was poor transport facilities, poor asset base, and unfavorable agro-climate, lack of credit facilities, lack of awareness and training, and lack of basic infrastructure. The study further suggested the need to develop a number of strategies especially for the poor people to facilitate successful food security in relation to availability and accessibility. Those included the development of rural infrastructure in terms of road, market, electrification, telecommunication and storage facilities as well as also institutional innovations to reduce entry costs and barriers to poor livelihood groups. It was concluded that a comprehensive

development plan, including increasing the scope for non-farm activities, for the backward regions was most urgent.

In another study Dzadze, Aidoo and Nurah (2012), sought to identify factors that limit or increase smallholder farmers' access to formal credit in the Abura Asebu-Kwamankese district of the central region of Ghana. The study was conducted in five towns of the district (that is Abura, Abakrampa, Asebu, Edumfa and Nyamebekyere). Data for the study were collected from 100 farmers and officials of five formal lending institutions through cross sectional survey. The study showed that 35percent of farmers interviewed had access to formal credit whilst 65percent had no access. Chi-square test of independence showed that access to formal credit was significantly related to farmer's educational level, extension contact, membership of Farmer Based Organization (FBO), and ownership of Bank savings account. The logistic regression analysis showed that extension contact, possession of savings account, and educational level of the farmer were the principal factors that significantly influenced smallholder farmers' access to formal credit in the study area. The study recommended that efforts should be made by the MoFA to enhance farmer-extension agent contact by providing logistics on time for Agricultural Extension Agents (AEAs) to pay periodic visits to farmers in their communities. In addition, farmers should be encouraged through periodic education and sensitization to save with Banks to improve access to formal credit.

Sianjase and Seshamani (2013), investigated into the impact of farmer input support programme on benefiting households in Gwembe District, Zambia. The survey sought to examine how the program is producing commensurate impacts on maize production by the farmers who benefit from the program. The authors achieved this objective employing a survey on farmers

through a structured questionnaire covering 570 respondents and analysed the data using quantile regression model. The analysis revealed that the largest production impact is on the farmers at the 50th percentile. Also, significant dependence doubts on the efficacy of the program to reduce poverty and improve household food security.

Additionally, some studies conducted on the influences of the farmers' support systems and food security, investigated the situation from both the perspective of the small holder farmers and the farmer cooperatives. A study carried out by Sikwela & Mushunje (2013), assessed the role played by Farmer Support Programmes in addressing income and welfare of smallholder farmers in South Africa. Data used in this study was collected using a structured questionnaire and personal interviews from eighty-nine (89 farmers). An empirical analysis based on a Tobit and Propensity Score Matching technique potential, diffusion effects were eliminated between farmers supported by Farmer Support Programmes and farmers that do not belong to support services. According to Sikwela and Mushunje (2013), findings show that household size, education level of household head and distance to the nearest market were found to be significant at 10percent and 5percent. Farmer Support Programmes and collective marketing activities such as the collection and sale of members' output appear to have a significant and positive impact on smallholder welfare of those farmers engaged in them.

Additionally, Sikwela, Fuyane and Mushunje (2016) evaluated the South African agricultural cooperatives role in engaging in collective marketing activities over time, given market and institutional characteristics. The study used a sample of eighty-nine agricultural cooperatives from the Eastern Cape and KwaZulu Natal Provinces in South Africa. According to the authors, the study

analysis suggested that collective marketing faces challenges related to increasing competition. Empirical results suggest that among South African cooperatives, those established in KwaZulu Natal and partly in the Eastern Cape Provinces and upon the voluntary initiative of farmers are more sustainable and have access to better paying markets. The results show that Non-Governmental Organizations supported cooperatives have a longer life span than Government controlled cooperatives.

In another study, Effah-Abedi (2014) explored the causes of food insecurity by examining the challenges confronted by smallholder farmers in the Wioso and Woraponso areas of the Asante Akim North Municipality in the Southern part of Ghana. Effah-Abedi used the rights-based approach to explain how to reduce poverty through good governance and safeguarding the interests of marginalized groups. The study relied on qualitative methods such as focus group discussions and semi-structured interviews in constructing data with smallholder farmers, officials of the Ministry of Food Agriculture and other relevant stakeholders. The study found a number of difficulties faced by smallholders including inadequate access to credit facilities, poor access and use of modern inputs such as planting materials and agrochemicals. The study recommended concerted efforts by government, NGOs and farmer-based organizations to address the difficulties. Finally, the study concluded empowering smallholder farmers so that they will be able to explore other livelihood strategies and adapt to new innovations in their farming activities to help ensure food security.

In another study, Sakyi-Dawson et al. (2016) worked on the assessment of the level of agricultural production and food security in Ghana. The methodology used for the study was qualitative analysis of various researchers. Secondary data was predominantly used as a result of careful applying reasonable data simulation techniques. The study was strictly descriptive in nature. The study found numerous factors affecting the progress of food security. It revealed that the decline in agriculture labor force which is adversely affecting the country in absolute level terms and relative importance. It further indicated that, smallholder farming can be improved through the enhancing and extending the provision of external farming education, irrigation facilities, fertilizer usage being key to improving agriculture production on yield. The importance of reviewing and expounding on agrarian politics was underscored in the analysis. The study concluded that providing farmers with necessary support interventions that have a positive impact on their well-being would ultimately enhance food security.

Aburinya (2017) also studied the impact of agricultural policies and food security on smallholder farmers in northern Ghana. The study employed the Oxfam model to assess the impact of agricultural policies on food security among smallholder farmers in northern Ghana. In doing this the data was pooled from national agricultural policies and regional policies from 1980 to 2000. It was found that government agricultural policies have failed to a have positive impact on food security among smallholder farmers in northern Ghana because they were more geared towards promoting the large scale commercial agricultural sector than the smallholder agriculture sector. The study also showed to be supported by the data in Ghana which proves that food insecurity

is still a major problem among smallholder farmers in northern Ghana despite the policies and programmes put in place to address such issues.

Lessons Learnt

The study draws important lessons from the empirical review with respect to identified various support systems such as extension access, credit facilities, available market, infrastructure and improved technology for promoting farmers' food security. Most of these studies, Dzadze et al. (2012); Miller et al. (2010); Sianjase and Seshamani (2013); Sikwela and Mushunje (2013); Sakyi-Dawson et al. (2016), used the entitlement theory to examine farmers support systems and food security while, Sikwela, Fuyane and Mushunje (2016) used sustainable livelihood theory to explain the degree and ability of a farmer household to have access to food comes from their own production, exchange, and income.

Concerning issues of methodology, most of the studies on famers' support systems and food security Sakyi-Dawson et al. (2016), Sianjase and Seshamani (2013); Dzadze et al. (2012) used mixed methods in analyzing the relationship between farmer support systems and food security. Others used quantitative methods (Sikwela, Fuyane & Mushunje, 2016; Sikwela & Mushunje, 2013). Additionally, Effah-Abedi (2014); Miller et al. (2010), used qualitative methods to describe available support systems for farmers in promoting food security. Aburinya (2017) used documentary review to examine policy strategic plan on food security.

The sampling procedure adopted by the empirical studies was random with sample sizes varying from 60 to 400 smallholder farmers. The main data

source for the studies was primary and secondary with questionnaire and interviews being the main data collection instruments. The most common variables that the data collection instrument covered were levels of extension services, financial support, and markets. The variables were mostly measured on the nominal scale and data analyzed with correlation and regression tools (Sikwela & Mushunje, 2013; Sikwela et al., 2016). Thematic discussions Effah-Abedi (2014); Miller et al. (2010), were also employed to explain the farmers' experiences on their accessibility to the support systems.

Conceptual Framework for Farmers' Support Systems and Food Security

The conceptual framework was informed by the concepts, theories and empirical review of the study. It creates a synergy among the main variables underpinning the study, namely: farmers' support systems and food security (see Figure 1). The framework depicts that; farmers' support systems can promote food security which is influenced by the Entitlement Theory (ET) and Sustainable Livelihood Theory (SLT). Farmers are challenged by surrounding vulnerabilities. These vulnerabilities include; shocks (crop failure, post-harvest losses, natural hazards), Seasonality (price and production fluctuations) and Trends (population growth, resource stock, government administration outside control of household and other stakeholders). This is linked to the contribution of food unavailability and food inaccessibility that promote food insecurity. However, farmers' vulnerabilities can be limited through strategic policy implementation process by institutions such as MoFA, farmer groups and NGOs in the form the support systems.

The farmers' support systems serve as the channel concerned with material and non-material resources in the agricultural sector. Among these resources are extension services, access to credit, improved seeds, storage facilities, subsidised agrochemicals, mechanized machines and access to market which are the attributes that are critical to their food security (Savikurki, 2013; Ellis & Freeman, 2004; Sen, 1989). Furthermore, the implementation of these support systems helps farmers to the contribution food security dimensions comprising food availability, accessibility (Effah-Abedi, 2014). Through the provision of the farmers' support systems positive externalities such as improved food security, increase income and improved well-being can be achieved to reduce vulnerability for sustainable rural agricultural development.

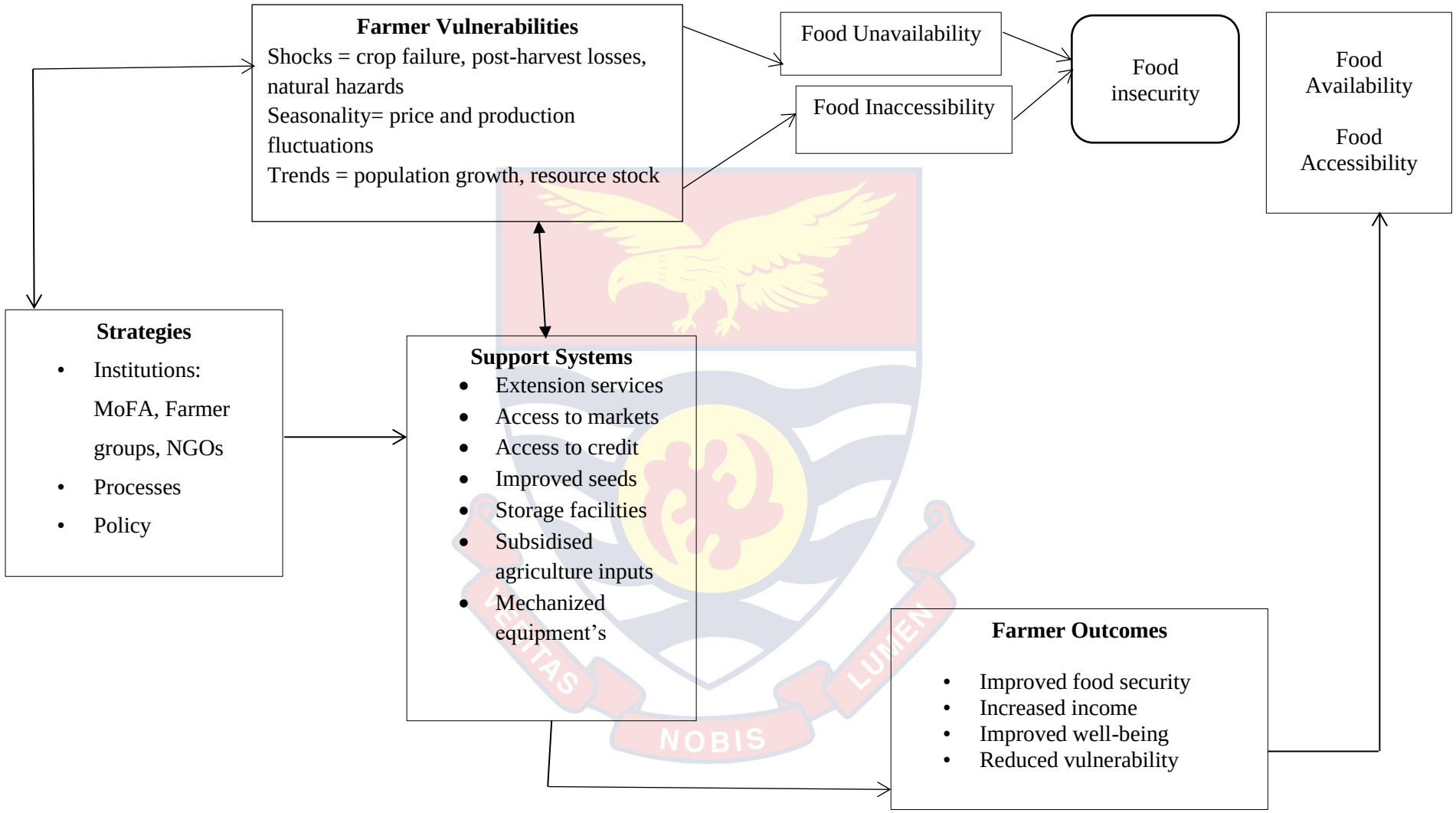

Figure 1: Conceptual Framework for Farmers' Support Systems and Food Security influenced by ET and SLT
Source: Author's Construct**,** 2018 based on reviewed literature

Chapter Summary

This chapter has focused on the theoretical perspectives, concepts, definitions, empirical perspectives and conceptual framework as they relate to the topic. Other issues discussed include farmers' support systems and food security. The conceptual framework of the theories clearly how farmers' vulnerabilities such as shocks, seasonality's and trends could be improved through support systems to enhance food security.

CHAPTER THREE

METHODOLOGY

Introduction

Research methodology is an essential component of research because it serves as a guideline for the researcher to follow (Sarantakos, 2013). It articulates the data required, methods that were used to collect and analyse the data to answer research questions. This chapter discusses the research design, study area, target population and sampling procedure. In addition, the chapter describes the data collection instrument used, data sources, field work, data processing and analysis as well as ethical consideration of the study.

Research Design

The qualitative approach was adopted to explore farmers support systems and food security. This is because the qualitative methodology draws from the epistemic interpretivist tradition which states that "no external reality exists independent of our beliefs and understanding (and that) reality is only knowable through the human mind, and socially constructed meanings" (Ritchie, Lewis, Nicholls, & Ormston, 2013, p.16). Sarantakos (2013) explained that it entails non-numerical examination and interpretation of observations for the purpose of discovering underlying meaning and patterns of relationships. Interpretation of data accrued therefore, and knowledge acquired is based on the participants' point of view, and is grounded in the individual's world of experience (Shank, 2006).

The qualitative research methodology is explained as the approach which allows a deeper interrogation of the assumptions, questions, and logic of theoretical perspectives, and the fact that people continuously construct, develop and change the everyday interpretations of their world (Charmaz, 2004; Babbie & Mouton, 2001). In social research, the qualitative research design, according to Ospina (2004), provides flexibility and sensitivity to contextual factors; ability to study symbolic dimensions and social meaning; and increased opportunities to develop empirically supported new ideas and theories. However, it is often criticized as being time-consuming, according to Chadwick, Bahr, and Albrecht (1984), even with a small sample size. Another concern is its inability to generalize, and its use of subjective data.

This study was interested in context-specific issues and therefore the problem about generalisation does not apply. Varied qualitative methods were also used to ensure both diversity and validity in the data collected. The findings accrued cannot be replicated in all contexts, but rather, they can be transferred to similar contexts. The choice of the research methodology was aimed at collecting data that will enable the study draw out subjective interpretation from framers with regard to their responses to support systems, and how it promotes food security. It was therefore appropriate to use qualitative research to focus on an in-depth insight into the communities for better understanding of their culturally informed food security support systems.

The exploratory study design was adopted to explore how farmers' support systems promote food security. According to Ritchie, Lewis, Nicholls and Ormston (2013), the exploratory design provides a tool for allowing better understanding of an occurrence or situation, as a result of its concern for meanings for an occurance. It tends to develop at the beginning stages of the

analysis when most of the descriptive work has not been undertaken (Walliman, 2011). In view of this characteristic, the study to adopted the design to explain how the combined components of farmers support systems promote food security.

Study Area

Abura-Asebu-Kwamankese District (AAKD) is the study area (Figure 2). The district is one of the twenty districts in the Central Region of the Republic of Ghana. It shares boundaries with Assin South District to the north, Mfantsiman Municipal to the east, a 5km stretch of the Gulf of Guinea on the south-east, Cape Coast Metropolitan to the south and Twifo-Heman-Lower Denkyira District to the west. With a total land area of 9562 Km^2, the district occupies 4 percent of the total land area of the region (Ghana Statistical Service [GSS], 2014). The monthly temperatures range between 23°C and 28°C with the lowest around October and the highest around March and April. The average rainfall is around 110cm. The district experiences double maxima rainfall pattern starting at the end of April, peaking in May-June and declining in July. The District is characterized with evergreen and semi-deciduous forest which is conducive for the production of variety of cash and food crops and the rearing of farm animals (GSS, 2014).

There are about 26 key communities in the Abura-Asebu-Kwamankese District among which Asebu, New-Ebu, Old-Ebu, Edumfa, Amosima, Batanyaa, Asuansi, Pra Awusi and Abuase (see figure 2). The economy of the district is predominantly agrarian which employs about 70 percent of the working population. The district is predominantly rural with 66.4 percent of the population living in rural areas, while 33.6 percent live in urban areas. In the

rural localities, about seven out of ten households (95.0%) are agricultural households. The district agrarian nature is attributed to the fertile soil and favorable climatic condition (GSS, 2014). Most households in the district (95.7%) are involved in crop farming such as cassava, maize, plantain, potatoes and some vegetables to ensure food security. Poultry (chicken) is the dominant animal reared in the district. The average household size of the district is lower (3.9) than the regional average of 4.2 and the national household size which is 4.4.

The inhabitants of the AAK district also have diverse ethnic backgrounds. It is predominantly inhabited by the Akans. The favourable climatic conditions in the district explains the immigration of other ethnic groups from both the South and North of Ghana primarily to farm. These migrant farmers access land from the indigenes mainly through sharecropping. The sharecropping arrangement comes in two forms, the *ebunu* and the *ebusa*. According to the Ministry of Manpower, Youth and Employment (MMYE) (2007) in the sharecropping arrangements, the migrant farmers in the '*ebunu*' system are responsible for cultivating the farm on a virgin land for the farm owners and during the harvest period, the proceeds are shared equally between the landholder and tenant farmer. Whereas in the '*ebusa*' system, the sharecropper takes care of the matured farms and the proceeds are shared at the rate of one third to the tenant farmer, and two thirds to the landholder. Tenant farmers pay a fee determined by the size of the land and the duration of tenancy. These landholders are customary owners of land operating under the stool, clan or family. They are indigenes tracing their origin to the district.

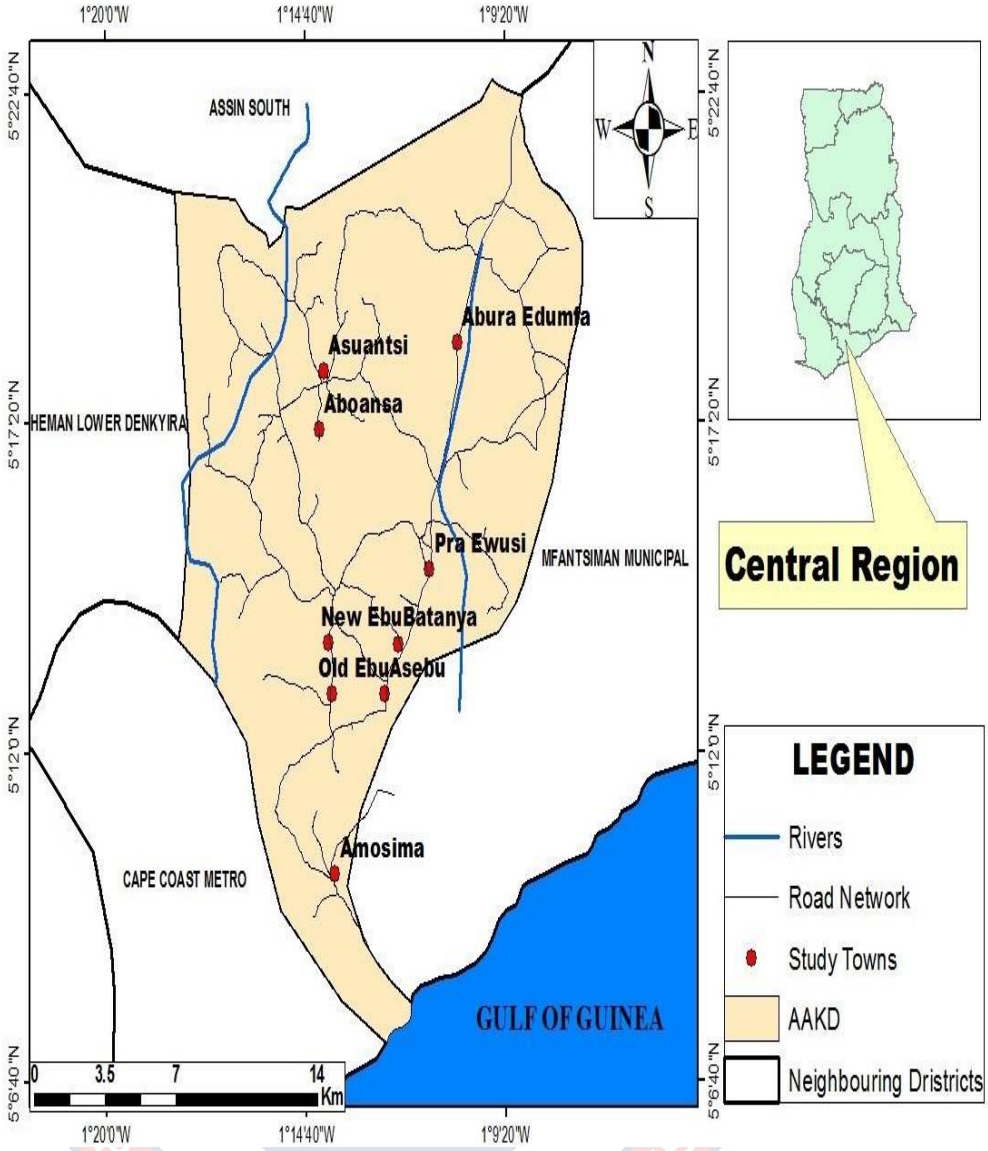

Figure 2: A map of Abura- Asebu Kwamankese District

Source: Field work, 2018

Population

Population in research is the aggregation of elements from which the sample is actually selected (Rubin & Babbie, 2007). The study's target population were farmers' in seven communities and development interveners (implementing stateholders) in the AAK district. These seven communities included Asebu, Edumfa, Amosima, Batanyaa, Asuansi, Pra Awusi and Abuase.

The farmers were both males and females in the communities. The development interveners comprised the district agriculture director and agriculture extension agents (AEAs) who had direct contact with the farmers. The communities were selected based on the zoning done by the MoFA District office of AAK (2018) based on the major staple food crops predominantly grown namely; maize and cassava.

Sample and Sampling Procedures

The study adopted the purposive sampling technique to generally select the farmers and the development interveners for providing farmers the food security support systems. According to Kumar and Phrommathed (2005), purposive sampling involves strategies in which the researcher exercises his or her judgment about who will provide the best perspective on the phenomenon of interest, and then intentionally invites those specific perspectives into the study. Additionally, purposive sampling includes selecting units, which have particular characteristics to enable detailed understanding of the central theme (Ritchie, Lewis, Nicholls, & Ormston, 2013).

The specific purposive sampling techniques used were the criterion sampling and the expert sampling technique. The criterion sampling is explained as searching for particular individuals who meet a certain condition (Neuman, 2011). The study purposively sampled 85 farmers from the seven communities who grow the major staple food crops (maize and cassava) to promote food security. As far as the AAK district is concerned, the selection of these crops is principally due to the fact that they are major staples that have multiple food usage in their day-to day-living.

Key persons were selected using the expert sampling technique. This sampling technique, according to Eliassen, Melhus, Kruse and Poppel (2012) involves persons with demonstrable experience and expertise in an area. The study employed this technique to know the point of view of the development interveners about the farmers' support systems and food security. For this study, the specific key persons were one district agriculture director (DAD) and Agriculture Extension Agents (AEAs)

Data Sources

Data were collected from primary and secondary sources. The primary data was collected from community farmers and the key persons. The data from farmers covered available food security support systems in terms of availability and accessibility as well as the challenges they face in accessing the food security support systems. The data from the key persons focused on the implementation of the available support systems. The secondary data on the other hand, were obtained from policy documents and reports on agricultural strategic plan on food security studied. These were acquired from the MoFA, district office in the AAK district.

Data Collection Methods and Instruments

The primary data collection methods used were focus group discussions (FGDs) and interviews. Documents were also collected from the various development interventions (implementing stakeholders) for analysis. According to Neuman (2011), the FGD is a special qualitative research data collection method where people are informally interviewed in a group setting. The FGD requires a membership of 8 to 12 participants. Differences within groups

bring out issues that would usually not have been anticipated by the study and neither would have emerged from individual interviews (Babbie, 2005). The FGDs were employed as a result of the study's focus on the spontaneity that arises from the groups' stronger cultural context. Another reason was the tendency of respondents revealing more of their own perspectives on support systems and food security.

A total of 85 individual farmers who grow the major staple food crops (maize and cassava) to promote food security were covered in eight FGDs. The eight FDGs were conducted in the seven predominantly grown staple crops communities Farmer Based Organisations (FBOs). Two FDGs were conducted in the Asebu (Old-Ebu) community since FBOs available were large in number. One FDG each was conducted in the remaining six communities. In each FDG 9-12 farmers were selected through convenience approach. This implies farmers in the FBOs that were available at the time of visit. The 85 individual farmers (see Table 1) were made up of 51 males and 34 females.

Table 1: The Distribution of respondents by community

Communities	Respondents
Asebu	20
Amosima	12
Edumfa	12
Batanyaa	12
Asuansi	10
Pra Awusi	9
Abuase	10
Total	85

Source: Field work, (2018)

The FGDs were used to acquire information on the dynamics in responses to support systems. The FGDs were conducted in the seven study communities in the AAK district with the assistance of a research team. A major factor on which FDG participants were selected was their experiences in the assessment of farmers' support systems. Other methods used were the interviews with the key persons and the in-depth with farmers. The key person interview was used to elicit information from participants who were in charge of providing the farmers support systems. Additionally, four in-depth interviewees were also derived from the farmer group heads in Asebu-New Ebu and Asuansi made up 2 males and 2 females.

The data collection instruments for the study were interview guide and focus group discussion guide. The guides were unstructured and based on the themes derived from the study objectives. The thematic areas covered in the instruments were available food security support systems in terms of food availability (ownership of resources, natural hazards, pre and post- harvest losses) and food accessibility (infrastructure, life styles, preferences, human resource management), implementation of the available food security support systems and the challenges farmers face in accessing the food security support systems. For all the communities, although the various guides were written in the English language, the interactions were conducted in the local language, Fante and Twi.

Field work

Data were collected in April 2018 after an initial reconnaissance survey of the district. The AAK District Director of Agriculture, was contacted to identify the study participants. The research team conducted about two to four

interviews daily. Two FGDs were conducted each day. Highlights of the various interviews were recorded at the end of each day. The transcription was also done daily in order to capture details of the interviews accurately. Notes taken were grouped in the context of the research objectives so as to make the analysis easier.

Ethical Considerations

Saunders and Lewis (2009) explain that social scientists generally have a responsibility not only to their profession in its search for knowledge and quest for truth, but also for the subjects they depend on for their work. Thus, social researchers must take into account the effects of the research on participants, and act in such a way as to preserve their dignity as human beings. In the light of concerns raised by Saunders and Lewis, participants were assured that their responses would be treated with utmost confidentiality, with anonymity and non-traceability guaranteed. Participants initially were reluctant to use their productive time to answer questions but they accepted to participate when the rationale of the study was explained. This was to give the choice to determine whether to participate or not. Consent was also sought from each participant before the interviews and FGDs were recorded.

Data Processing and Analysis

All the interviews with focus groups and the individual respondents were transcribed and translated. The key person interviews, originally conducted in English, were also transcribed**.** The data were grouped under various thematic areas. Due to the central focus on farmers support systems and food security, socio-demographic data were collected only on the focus group respondents to aid in the assessment of the farmers' support systems. The research analysis was

guided by the objectives and research questions of the study. Themes were identified using open coding where the data collected suggested the various themes for analysis. A number of quotes were used in the text of the analysis to support some of the arguments that were made.

Chapter Summary

The study employed a qualitative research design to explore farmers support systems and food security. FGDs, in depth and key person interviews were conducted to collect data in response to the research questions. It is however important to note that economic and time constraints did not permit the analysis of the background of the various development interveners in charge of providing the food security support systems. It is also necessary to note that findings from this study cannot be generalised as responses were based on the participants' point of view which is subjective. This, however, poses no problem as the study is context specific.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents a discussion of findings on the farmers' support systems and food security. The proposed conceptual framework for the study is used in interpreting the findings. There are four broad themes in the discussion of the findings, which are presented according to the specific objectives of the study. The first section examines the existing strategic plan for food security in the AAK district. The second examines the implementation of the available food security support systems for farmers. The third section describe farmers' experiences of available support systems for promoting food security. This necessitated socio-demographic background of farmers to enable easier understanding and interpretation of the data. The final section analyses the challenges farmers face in accessing food security support systems.

The existing strategic plan for food security in Ghana in relation to Abura Asebu-Kwamankese (AAK) District

The first objective of this study sought to examine the available strategic plan for promoting food security in Ghana in relation to AAK district. In order to achieve this objective, a review of the strategic plan (agriculture policy document) was carried out. This was done to ascertain the extent to which the existing strategic plan addresses food security issues in Ghana and specifically to AAK district. The review focused on food availability and food accessibility as two components of food security.

The review examined the available national policy for food security support systems which has been put forth (herein the Food and Agriculture Sector Development Policy II [FASDEP II], 2007), as informed by the policy document within the context of decentralization and local level governance. According to the policy, the following were the major farmers' support systems which are in place to ensure food availability and accessibility in the district; extension services delivery through AEAs**,** **s**ubsidized agricultural inputs (improved seeds and agro-chemicals)**,** agriculture mechanisation, available local markets and financial services.

The researcher discovered that the FASDEP II makes specific provisions designed for all categories of crops (food, horticultural and industrial) in all districts, for which the AAK district is inclusive, as a way of promoting its food security. Enshrined in the policy is a crop development component which seeks to achieve the improvement of an integrated promotion of categories of crops, their competitiveness and profitability through access to improved technological packages for increased productivity, as well as a sustainable management of environment in the crop production systems.

MoFA's support to districts for food security focused on, at most two of the major food crops (maize, cassava, rice, yam and cowpea). Specifically, in the AAK district policy the two crops selected were maize and cassava. Maize had varieties locally known as *obaatanpa, dobidi and ekomasa* also known as the white and yellow corn and cassava had varieties locally known as *tek bankye, abasa fitaa, efisa afi, ankra, and bosomie nsia* also known as the early maturing cassava within six months. The actual selection of the crops relied entirely on specific contextual issues such as the real gains from the crops, the social and food value of the crops as well as the availability of markets for the crops. In

addition, the selected crops are major food security crops available to meet all their domestic and social needs all year round especially during the lean seasons when effective measures are undertaken.

A key focus of the policy was to ensure a unified and viable manipulation and use of natural resources for increased production and productivity of the crops in partnership with appropriate government and non-governmental agencies (FASDEP II, 2007). In this sense, the policy was to promote a collaborative effort among stakeholders to ensure that resources are used efficiently and judiciously through effective management. The support systems designed to be in place for Ghana in relation to AAK district was for the ultimate promotion of food security.

The policy was comprehensive and committed effort to provide improvement in extension services delivery, with the focus on an efficient and demand-driven service by providing the required training and education for Good Agricultural Practices (GAP), promoting access to agricultural inputs (improved seeds and agro chemicals) to enable farmers achieve a competitive advantage in the use of improved resources, agricultural mechanization (mechanized machines, irrigation facilities, transport, storage and processing) with the focus on increasing farmers and agro-processors access to mechanized services at affordable cost, increased competitiveness and enhanced integration into Domestic markets, and financial services (credit facilities)

According to the FASDEP II, the major goal of the extension policy in the plan is to have a well-organized and demand-driven extension service for the various districts, through partnership between the government and the private sector. This indicates that the FASDEP recognizes the need for the

intensification of support systems for farmers through effective utilization of extension officers. Additionally, strategies outlined for the improvement of extension services focused mainly on variations in the extension service provision so as to increase access of different farmer groups. This would have been a very important mechanism for the farmers in AAKD given the fact that most of them are scattered in different communities; have diverse socio-demographic backgrounds; and more importantly are engaged in the major staple crops.

Another goal, as enshrined in the policy, is the full and recognizable integration of women in extension programming. This is equally important with respect to promoting gender issues in productivity and food security particularly given the fact that women and children are more vulnerable to risks in terms of food insecurity induced crises. The policy outlined the relevance of information to men and women and equitable access to services (farm inputs, credit, training and education). Another important aspect of the policy which is meant to increase extension services is the use of "mass extension methods". This method according to the policy focused on extensively engaging mass communication and information sharing mechanisms through avenues such as farmer field schools, nucleus-farmer out growers, extension fields in districts, mass communication through radio, Television, communication vans, farmer groups and many others. It is expected this will help farmers during education and training sections of GAP to promote food security.

A major key to effective extension services is the capacity and resources of the institutions in charge of planning and implementation. According to Brenda (2012) in relation to Entitlement Theory (ET) and Sustainable Livelihood Theory (SLT), a good policy without an effective and capable institutions to implement, monitor and evaluate its implementation is not worthy of being formulated. However, FASDEP II explicitly encouraged building the capacities of Farmer Based Organizations (FBOs) and Community-Based Organizations (CBOs) for them to effectively deliver extension services support. This, in the tenets of the policy, was to ensure the continuous need to enhance the quality of extension to service operators in agriculture, especially in application of GAP to ensure the safety of produce from the sub-sector. Accordingly, the policy emphasized the need to improve upon the allocation of resources to districts for extension delivery through enhanced efficiency and cost-effectiveness. This, as espoused in the policy, is ultimately aimed at strengthening human resource capacity as confirmed by entitlement theory and sustainable livelihood theory focus on developing collaborative research, technology transfer and knowledge exchange on best practices and procedures in sustainable maize and cassava production.

Another support system in the FASDEP II is farmers' access to agricultural inputs (improved seeds and agro-chemicals). The major emphasis of this strategy, upon perusal of the document, is to empower farmers to achieve a competitive advantage in the use of improved resources. According to the plan, this would be achieved through the promotion of networks, application of laws and regulations that offer an enabling environment for the establishment of input shops in the districts and thus enhance trade in and use of inputs. The policy accentuated on critical efforts to generate a deeper appreciation on the

usefulness and benefits of agricultural inputs amongst the farmers. One other key issue the policy sought to achieve is to encourage local farmers to produce and re-package their agricultural inputs in order for them to reduce costs. The policy has a strong urge on the forms of agricultural inputs to be made available to the farmers.

The policy also placed much emphasis on agricultural mechanization. The main policy objective, as documented in the FASDEP II, is to facilitate farmers' access to mechanized services at affordable cost. The plan states that the Rural Technology Information Unit (RTIU) of Agricultural Engineering Services Directorate (AESD) would continue to deliver appropriate mechanized technologies to address the needs of farmers. This clearly indicates that a Unit or an office has been or is expected to be created in all the districts of Ghana to serve as a point of information dissemination in order to update farmers, particularly those in rural areas like the Abura Asebu-Kwamankese on the issues with technology and mechanization. The major concerns here are a perennial low level of mechanisation (cutlass and hoe) due to limited availability and access to appropriate high cost of agricultural machinery and equipment. The approaches are to ensure collaboration with the private sector to build capacity of individuals and companies to produce and or assemble appropriate agricultural machinery, tools, and other equipment locally.

Additionally, the agricultural mechanization focused on the promotion of small-scale multi-purpose machinery along the value chain, including farm level storage facilities, appropriate agro-processing machinery/equipment and Intermediate Means of Transport (IMTs) and the use of animal traction (AT) through establishment of AT centres and facilitate the establishment of mechanisation services provision centres. Finally, to develop human capacity in

agricultural machinery management, operation and maintenance within the public and private sectors in order to increase awareness on the availability and use of successfully proven appropriate technologies.

Another important area, in relation to farmer support systems were increased competitiveness and enhanced integration into domestic markets. This is very necessary because it provides a huge potential for market accessibility, increased production, increased income and the general motivation or incentive for investment. The FASDEP II document emphasizes supports for the semi-commercial and commercial smallholders/farmers for them to produce for the expanding domestic markets, including the agro-industry. In view of that, a major strategy which is being advocated for by the plan is to encourage partnership between private sector and district assemblies to develop trade in local and regional markets with improved market infrastructure and sanitary conditions, and enforce standards of good agricultural practices.

The final support system, as envisioned in the plan, focuses on financial support in the form of credit to the farmers. The policy explicitly acknowledges that lack of access to funds is a major limitation to the development of the agriculture sector in the country. The major strategies set out to address this is to strengthen the capacity of operators in credit management and loan monitoring. In addition, the policy seeks to restructure loan application procedures and extend training of farmers on loan procedures. Moreover, it tends to encourage increased efforts in promoting networking between formal and informal financial services delivery and recovery of loans and also promote flexibility in the types of collateral demanded by financial institutions. Another key area which the policy advocates are resourcing or credit support systems using the group lending approaches, and strengthening the capacity of FBOs to

facilitate delivery of financial services to their members would be strengthened. In summary, it can be realized that the national food security policy document captured very important support systems which, if adhered to thoroughly by the stakeholder agencies such as the government, FBOs, NGOs, the individual and group farmers, credit institutions among others, will go a long way to promote productivity and food security issues in the country. Furthermore, the policy spells out the importance of entitlement theory and sustainable livelihood theory which take explicit note of the mode of production, the structure of ownership, socio- economic and legal arrangements of society.

Although there were some strengths that were outlined in the policy, some weaknesses were also identified. One of the major weakness identified in terms of market accessibility was the focus of the policy on commercial smallholder farmers and semi-commercial farmers for the expanding of the domestic market leavening out non-commercial smallholder farmers who are the predominant group in AAK district. Furthermore, the policy does not capture farmers' challenges in terms of accessing finance as well as agricultural mechanization.

Having analyzed the national agenda and policy frameworks for providing a general guideline in ensuring food security and farmer productivity, this study sought to examine the implementation of the farmer support systems by the implementing agencies involved in ensuring food security in the AAK district.

Implementation of farmers' support system in the AAK district

The researcher's quest to ascertain how the national policy on food security farmers' support systems are effectively implemented in the district. In

actual sense, this level of policy implementation is enforced by the passage of the local government Law (Act 462) which requires implementation of policies at the district level. The respondents included one DAD who was individually interviewed and seven AEAs who were grouped interviewed since they were homogeneous and presented similar responses. Interactions with the director and AEAs provided a vivid explanation of the mode of supply of each farmers' support system, their strengths through delivery and how much of it was available for the farmers and their major challenges in the AAK district.

The researcher was informed that the District Department of Food and Agriculture implements the farmers' support systems. This basically done through the Agriculture Extension Agents (AEAs); since they serve as an intermediary between the farmers' and the District Agriculture Director (DAD) in the delivery process. However, the director of Agriculture expressed that, there are inadequate human resource personnel in their delivery of service. He acknowledged that, the whole district currently has seven AEAs responsible for service delivery in all the farming communities in the district. This affects the delivery of services in the district although the plan outlined increase in personnel since 2007 (District Agriculture Director).

The researcher found out that the AEAs disseminate information from the District Agriculture Director to the farmers or sometimes through the FBOs. According to the DAD, the AEAs organize programmes that encourage local development or adaptation of technologies; address the needs of specific categories of farmer and support farmers' organizations to influence collective as well as individual behavior. This implementation falls in line with the conceptual framework (Sen, 1981; Ellis & Freeman, 2004; Savikurki, 2013) that extension services have a greater understanding of the scientific basis of

sustainable technologies and to respond to the environmental issues which hinders farmers to promote food security.

In addition, the DAD indicated that the implementation of the plan focused on training of extension personnel. This was to promote management practices and professional development to ensure available farmers' support systems for sustainable agricultural development. Additionally, collaboration and partnership were important for effective extension service delivery at the local level. DDoFA was responsible for the coordination and development of the implementation framework. DDoFA plays the role of identification of agricultural commodities affected by unfair trade practices, lobbying for protection of strategic commodities identified in the policy (major staple crops) and facilitating access of stakeholders in the sector to special investment credit by lobbying for the establishment of the Agricultural Development Fund. However, interactions with the DAD and the AEAs, revealed that in relation to the two major staple crops produced, there are no private companies or NGOs for food crop farmers to help with the implementation of the farmers' support systems to promote food security.

The DAD indicated that the NGOs were hardly interested in food crop farming. He had this to say:

> Food crops production is not a viable area which can create enough income for their farmers to benefit the NGOs as well unlike cash crops such as cocoa, oil palm, cashew among others. The focus on cash crop farmers generate more revenue and foreign income for them. (DAD, AAK)

This clearly depicts an issue between the policy and implementation in relation to the collaboration of private companies and NGOs in the delivery of services. Despite the existence of this issue, which is a key problem for

implementation, it was expressed that those crops such as maize and cassava are very important for the livelihoods of the farmers and thus, required critical attention to promote food security. This assertion by the management is in agreement with Sikwela and Mushunje (2013) in line with Sen's ET argument, who argued that diversity of crops provision, from agencies in the public, private, NGO and academic sectors, gives farmers greater choice of sources of information on crops varieties to support the long-term sustainability of their farming. This correspond to the conceptual framework that depicts that farmers' vulnerabilities can be controlled if the right support system such as improved technology and extension service delivery is provided by agencies responsible to promote food security.

In the implementation of FASDEP II, the study revealed that the Human Resource Development and Management Directorate were supposed to conduct a human resource audit within MoFA, agricultural training institutions and the National Agriculture Research System in general to establish a comprehensive database on required and available skills for extension service delivery. This were to inform the required number of AEAs needed in the district to be able to increase the extent of extension service delivery in order to promote food security. However, it came out clearly that such audits and training were not conducted. In addition, management practices to support professional development of farmers which included supervision, appraisal and effective extension services were insufficient and virtually not effective. This finding shows the importance of what Sianjase and Seshamani (2013) discovered that effective management through supervision reduce farmers' vulnerabilities so as to increase food security. Additionally, the conceptual framework as influenced by entitlement theory and sustainable livelihood theory also outline the

significance of policy implementation of farmers' support systems to promote food security.

According the DAD, the implementation of the farmers supports systems for the promotion of food security in the district was expected to focus on inter-sectorial coordination between road department, financial section, health directorate, local government and trade policies, all of which have impact on agriculture. This was to ensure that there was synergy among the various supports systems available in the district in order to promote food security for rural development. Though these mechanisms were largely espoused by most of the stakeholders at the district who were interviewed for the study, the researcher, upon further interrogation, realized that many of these provisions are just on paper as most of the structures and documented principles were not adhered to in terms of the implementation.

Upon further interrogations the researcher realized that inter-agency linkages and synergies were not well coordinated and followed as outlined in the policy. This leaves a very gloomy picture for food security support systems in the district. This is because responsibility tended to shift towards one particular agency or institution to achieve the ultimate goal of food security. Oxfam (2009) argues that improving inter-linkages narrow rural disparities and ensures more broad-based sustainable rural growth. According to these authors, it is essential for agencies responsible for farmers' support systems to work hand in hand to limit farmers' vulnerabilities such as shocks and trends to promote food security. The absence of this inter-agency linkages points threats to food insecurity in the district which shows biasness.

The implementation of farmer support systems in the agriculture sector focused on the monitoring and evaluation of the available support systems in

the district. This was to help measure the achievements and progress under each support system objective in the national policy in relation to districts. In view of this, the FASDEP II acknowledged that, to accomplish effective monitoring and evaluation, there should be collaboration and coordination between Policy Planning, Monitoring and Evaluation Directorate (PPMED) and Statistics, Research and Information Directorate (SRID) for data collection and analysis for the policy review in a decentralized environment (FASDEP II) to be able to coordinate to identify the various challenges and constraints with DDoFA.

In relation to this implementation strategy, the DAD and AEAs spell out that at the AAK district Department of Food and Agriculture (DDoFA) that, the collaboration and cooperation between the PPMED and SRID tends to be very low. Furthermore, the degree of inter-ministerial coordination and cooperation were very limited. claimed they were not well resourced to take up key responsibilities particularly with funding, road construction among others, the other sectorial agencies were, according to the director, not doing enough to tackle these issues due to ineffective coordination and lack of funds. This created negative impact on the effective implementation of policies and plans. It also affected the data management of the support systems that promote food security in the district and apparently a huge link between the AEAs who are the givers and the farmers who are the beneficiaries. In view of this, management bodies were not able to carry out performance review of the support systems available to generate annual reports. This confirms the finding of Sen (1989) entitlement theory and as well as Aburinya (2017) that the coordination and cooperation between inter-ministerial institutions, particularly at local level, should be encouraged. This include agreements between agencies to work in different geographical areas or with different categories of clients, to

provide specialist services within each other's programmes, and to share information about locally adapted or developed technologies.

The implementation of the farmer support systems in the AAK district cannot end without presenting some of the challenges that the district is going through in the implementation process. Indeed, it is very apparent from previous discussions that some challenges affected the implementation of the plan. The Director of Agriculture and AEAs outlined the challenging factors they face in implementing the plan. Some negative issues he indicated was inadequate finance to run the affairs of the department. Again, delay in release of subsidized agricultural inputs to be supplied for farmers to promote food security. Additionally, ineffective coordination was among management bodies as well as inadequate logistics that help transportation means and inadequate human resource personnel to help in the delivery of the farmers' support systems were the major challenges which affected the implementation. This transcends into huge dissatisfaction of farmer groups, private companies and NGOs particularly those for the major stable crops, even though they were also responsible for implementation through collaboration with the district. The next objective or section of this report will look at the assessment of farmers' experiences of the available support systems.

Farmers' experiences of available food security support systems in the AAK district.

Farmers socio-demographic background characteristics influence food security support systems as outlined by the entitlement theory and sustainable livelihood theory. A number of socio- demographic characteristics were examined in the study. These were the sex, marital status, dominant marriage

type, household size, religion, educational level, number of years in farming, the major crops grown and the purpose of farming. The characteristic was highlighted because of their potential influence on the participants support systems and food security. The central focus on the farmers' support systems and food security demographic data were collected only on the focus group respondents.

A total of 85 individual farmers participated in the eight FGDs. Their sex distributions were recorded as follows: there were more men (51) than women (34) in both communities. As indicated earlier, one of the socio-demographic characteristics of respondents examined was sex. The examination of this variable was necessary because one's sex, to a large extent, determines the support systems received. In many developing countries male farmers receive more support systems than female farmers (Effah-Abedi, 2014). Gathering data about the marital status of respondents was necessary because of the implication it has for farm household size. A majority of the members in the groups were married. All the married were in monogamous marriages.

Another socio-demographic data of respondents that was relevant to the study was educational level. This was important because, according to Tedersoo and Nara (2010), people's educational level can inform their ability to accept support systems to address food security. Likewise, people with no formal education may limit their capacity to deal with improved methods of farming (Effah-Abedi, 2014). This may be due to, for instance, the relatively less technical knowhow with regard to skill, knowledge and competency required before a person engages him/herself in agricultural farming that affect productivity to promote food security. The male respondents tended to have a higher level of formal education as compared to the females. The highest

education level of the males in all the communities was senior secondary and that of the female participants was upper primary.

With respect to the number of years in farming, it became evident from the respondents that while the minimum number of years the farmers have been in farming was three years, the maximum was 60 years. In view of this, literature indicates that knowledge accumulation based on practical life experiences for longer years of experience increases peoples' access to financial support that promote food security (Dzadze et al., 2012).

Another important information which was relevant to the study was the major stable crops grown by the respondents. The research gathered that maize and cassava were the two dominant staple food crops in the AAK district. Maize and cassava are usually cultivated on the same piece of land by a method called inter-cropping. Cassava is usually planted a few weeks after the maize has been planted. There are two main seasons in a year for the cultivation of cassava and maize. The major farming season which coincides with the major rainfall season extends from March or April to June whereas the minor farming season which also meets the minor rainfall season is from August to November. According to 2017 AAK district report, farms are usually on small scale with most of them being less than two acres. This finding is in agreement with Prakash-Mani (2013) who assets that farm holdings in SSA is usually small ranging from 1.0 to 2.5 acres per farmer.

The last of the issues related to the respondents' characteristics and which was also very relevant for this study is the purpose of farming. According to Sikwela & Mushunje (2013), purpose of farming is key to food security to ensure sustainable rural development. A majority of the respondents in the groups indicated that they farm either to feed their families (home consumption)

and partly for sale. Only 4 out of the 85 farmers in the groups indicated that they farm basically to sell and make some profits. While, 2 out of the 85 farmers in the groups also indicated that they farm basically and solely for feeding or consumption purposes and not for any other purpose. The study revealed that farmers' basic intention or motivation for farming is to ensure that they have something to eat or feed on and at the same time, and be able to sell some of their crops and make some income out of the proceeds which informs the focus of SDGs 1& 2.

As part of the objectives of the research, I sought to ascertain the various support systems which are carried out in the district. This objective was meant to understand, from the perspectives of the farmers and key implementing agencies (DAD and AEAs) on the ground, what was being done in the district to support the farmers and for the ultimate promotion of food security in the district. Key questions which were asked were guided by the documented farmers' support systems as identified in the policy document these included extension services delivery, access to subsidized agricultural inputs, available markets, financial service (credit) and agricultural mechanization.

The most common support system as testified by most of the respondents in the groups was the availability of markets. This is because the responses indicated that markets are the only facilities which were made easily available for them to be able to market their produce. The study gathered that the locations of the markets were decided upon by the farmers, the communities and other stakeholders including the district assembly. There were also deliberate measures to ensure non-conflicting market days to enable the farmers have consistent and reliable source of market to sell their products. Upon further probes of the in-depth interviews, one leader of the FBOs made a contention

about the market situation. He said:

> Extension officers educate us on the marketing strategies in a form of presentation and packing of produce in order to help us avoid losses in production. They train us to add value to our produce when the need arises to gain extra income (Respondents at Abuase, April, 2018).

This response clearly indicates that, aside from the provision of markets to the farmers, there were sometimes extension programs to educate farmers on the various ways to market their products. This helped the farmers to develop their marketing strategies, to promote higher production for more income to reduce poverty which leads to sustainable development. An equally important revealing which is implicit in this response is the fact that extension services are provided.

Additionally, the study discovered that the provision of extension services as another support service which was quite popular among the farmers. The respondents indicated that they receive some form of training, education and technical supports through the AEAs. Major concerns obtained from the extension officers, were information on farmer field schools, timing for planting and harvesting, appropriate use of agro-chemicals and good farm practices. The farmers collectively expressed that these training programs helped them to do well in their endeavors as farmers. This finding confirms Hussein's (2007), as well as entitlement theory and sustainable livelihood theory findings that education through AEAs as a form of extension service support are more likely to increase the information base and decision-making abilities of farmer households, including the ability to access relevant support systems that would promote food security practices.

However, concerning the manner in which the extension services are carried out, it was gathered that the AEAs in the district attended to farmers who called them personally on their mobile phones for assistance. This implies that apart from contacts during open days for fora, it is very difficult for farmers to get access to the AEAs. There were no well-structured programs for meeting with the farmers. In addition, it was revealed by one respondent in the in-depth interviews that, not all the farmers have the opportunity to interact with the AEAs. In the narration, one respondent expressed that:

> The time AEA get to the community they are not able to meet majority of the farmers since majority of us might have gone to the farm already. As a result of this, extension services in the district are delivered when farmers personally request for such services thus eliminating farmers who do not have personal contact with extension officers (Respondent at Asuansi, April, 2018)

From this statement it can be deduced that, the AEAs do not have structured meeting times schedule with the farmers. Therefore, it was an important issue to look at by the stakeholders in terms of services delivery by AEAs. This is because AEAs hinder farmers quests to access and benefit from their services when the need arises, thus without their contact to promote GAP which ultimately lead to food security. This finding is demonstrated in the conceptual framework to explain that support systems strategies in place by stakeholders affect food security

More importantly, the study also found that the extension officers had shifted focus from the traditional staple food crops which is the main target for the FASDEP II (maize and cassava) and as identified to be very important to the livelihoods of the people in AAK. They have shifted towards cash crops (mostly citrus) farmers. According to these food crop farmers, the extension officers

have been having frequent meetings with the citrus farmers. They further explained that those meetings are mostly organized by a citrus company (private company), which funds the organization of such meetings. The farmers asserted that the citrus company invests a lot in ensuring that such meetings were organized. One farmer commented that:

> Usually when AEAs come here, they meet citrus farmers, not we the cassava and maize farmers…it is not their fault but the citrus buying companies that come here to buy. Because they have money and are buying a lot from the farmers, they often organize programs for them as a way of encouraging the citrus farmers to produce more so that the buyers will get more supply frequently with good ones (Respondent at Asebu- Old Ebu, April, 2018)

This quotation implies that, the focus on citrus farmers by the AEAs affects the productivity of the food crop farmers' good agricultural practices which ultimately affect food security. Also, farmers are limited with the support of private companies and NGOs to invest on the farm produce. Thus, this affects the food crop farmers in dealing with their vulnerabilities such as shocks which can be minimized through extensive training and education by AEAS as also shown in the conceptual framework as influenced by entitlement theory and sustainable livelihood theory.

Another important support system which was expected to have been highly prioritized is the supply of inputs and farm related resources. Despite the level of poverty and high vulnerability of the farmers in the district, supporting the farmers through agricultural inputs was not well enforced. Only 16 out of the 85 farmers in the FDGs indicated that they are supported with agricultural inputs (considering its form, quantity and cost in perspective. The study also revealed that most of these inputs were not given to the farmers for free but they

were subsidized. The respondents explained that as at the year 2017, agricultural inputs, in the form of agro-chemicals and improved seeds, were subsidized at the rate of 50 percent. They added that the support came through DoFA.

However, the researcher discovered that the pricing and the level of subsidy given to the farmers were inconsistent and unreliable. The farmers expressed serious concern about the way the prices of the inputs were managed.

They indicated that, initially they were paying half of the cost's prices of the inputs whilst, per the arrangement of the district assembly, they pay the remaining 50 percent. This was virtually similar to hire purchase agreement. Per this arrangement, the farmers seemed to be very comfortable and quite satisfied until the plan was changed to full payment schedule. This means the mode of supply of inputs had shifted towards the *pay as you go* form where farmers had to make ready cash payments before they are supplied with the inputs.

These practices have discouraged the farmers in patronizing the inputs supplied by the assembly and have resorted to their traditional practices by buying it from the ordinary shops. They further indicated that, what have even compounded the problem is the fact that the farmers are expected to travel to the district agriculture office (DDoFA) which is in the district capital (Abura Dunkwa) to have access to the inputs, which places extra costs burden to them as they have to spend so much on transportation. In this regard, they asserted that the accumulated inputs prices of the inputs from the district become relatively expensive than the ordinary market prices. This finding reflects a related study of Effah-Abedi (2014) as well as the entitlement theory and sustainable livelihood theory that there are some reasons why smallholder farmers who grow maize and cassava may not either have access to or do not use modern inputs to increase productivity to promote food security.

Financial support and agriculture mechanization were the least available support systems for promoting food security expressed by the respondents in the district. Access to financial support is a major issue of concern to many of the smallholder farmers. In the study it was established that the main source of finance for the farmers were informal sources of credit, farmers' personal savings and credit raised from family members and friends which were not enough to expand their production. These results confirm the findings of Dzadze et al. (2012) as well as the sustainable livelihood theory., that the amount of formal credit used per acre by smallholder farmers increases as the size of land holdings increases. This is because the farmers can increase production if they have access to formal finance; whereas smallholder farmers rely on informal means to yield lower production. This reflects the conceptual framework that explains the importance of financial support to promote food security.

The study revealed that agriculture mechanization was on a very low level which has a significant impact on food security. As asserted by Sen (1989) low levels of technology usually correspond with low levels of output. However, it has to be emphasized that technology cannot be left out when discussing ways of ensuring food security. During the interview, the farmers in AAK district expressed the use of simple farm tools such as hoe and cutlass for farming which limits the output levels as well as low technology planting materials. A respondent said that,

> The methods and technology for farming are mainly traditional and based on manual operations. The old-age cutlass and the felling axe are used for clearing the land and the hoe for seedbed preparation and planting. We use of our own knapsack sprayers to control weeds, pest and diseases using agro-chemicals. (The Respondent at Amosima, 2018)

It was revealed in the study that, there were no supply of agriculture mechanization such as tractor, tillers, spraying machines in order to increase output levels as per the policy document (FASDEP II) to promote food security.

Challenges faced by farmers in accessing food security support systems in the AAK district.

This section of the research sought to gather information on the various challenges farmers faced as part of the efforts to promote farm production and food support systems. The farmers faced several challenges in accessing food security support systems in the district. As it has already been highlighted in the previous section, the farmers were not comfortable with the way and manner the farm inputs were distributed. The supplies were collected from the district office which is far from some of the villages, which made accessibility difficult for some of the farmers. An FBO head made a plea on this issue saying that:

> the subsidized inputs should be sold at the various information centers at the communities to ensure easy access. It is rather sold at the DoFA office which is located at Abura-Dunkwa and is far away from the deprived areas in which accessing them due to transportation cost adds to the price of the inputs (Respondent at Asuansi, April, 2018).

From the above response, it was deduced that the farmers want the district to decentralize the sale of agriculture input, to the various community levels for easy accessibility. This implies that one of the key challenges the farmers faced aside from the high cost of the inputs, is the long distance to the point of sales. The conceptual framework as informed by the entitlement theory and sustainable livelihood theory. Makes reference to this and explains that easy

access to agriculture inputs (support systems) increase farmers' income and promote food security.

The farmer groups across the communities were not well organized, represented and coordinated to be used as points for distribution. The very food crop farmers who were the target groups and of high interest for food security issues were not visible as compared to the citrus farmers. This was realized from one of the in-depth interviews with the FBO heads. She said:

> Farmer Based Organisations are not popular in this district which is a major challenge affecting farmers. The popular FBOs available is on cash crop farmers rather than staple crop farmers which affect the delivery of services (Respondent at Asebu New-Ebu, 2018)

Market was another challenge for the farmers. Although there were available satellite markets in the district the farmers faced challenges in marketing their produce. They stated that, the satellites markets alone at urban communities do not render equal and sufficient accessibility to all farmers. Most of the rural communities had challenges of accessing those markets because of the long distance and high transportation cost. The farmers further expressed that, they often face the challenge of finding buyers for some of their farm produce because the available satellite markets do not have enough capacity to patronize all their produce. Additionally, one FBO head expressed that,

> In a particular season, they are able to get good harvest but cannot find buyers for those farm produce (bumper harvest). For instance, cassava which is their main staple and also selected by MoFA, when harvested in abundance at certain seasons, do not receive buyers at the market centers. They are therefore left to rot while some are sold at a cheaper price (Respondent at Asuansi,2018).

This finding echoes a strong contention made by Chamberlin and Jayne (2013) that farmers are easily exposed to unforeseen contingencies such as post-harvest losses, natural disaster makes them highly vulnerable to food insecurity. In the same vein, Ellis and Freeman (2004) in the sustainable livelihood theory asserted that such contingencies have the potential of negatively affecting the degree of access to other ways of settling and coping with shocks and risks. The authors concluded that effective strategic plans have the power to ensure effective support systems to address the needs of farmers and food security thereby reducing their vulnerability as explained in the conceptual framework. Therefore, this finding raises the question on the effectiveness of the support systems in terms of the available markets for the AAK district. During the FGD session a farmer had this to say;

> There are no buyers for our goods. Sometimes we work hard enough to produce more, but get little in return. Because of the similarity in our work, the produce comes in abundance especially cassava, and we don't get people to buy them. We carry them to the market in the morning and carry them back home in the evening. Things are hard; the government should come and help us (Respondent at Asuansi, April, 2018).

A greater number of the farmers were de-motivated from embarking on large scale production because they perceived that they will not get enough income, leading to their reliance on subsistence farming for survival. Additionally, post-harvest losses reduce their income and also affect food security resilience. This finding corroborates the findings of Sikwela and Mushunje (2013) that market failures pose problems of food insecurity for the smallholder farmer at the household level. This finding also corresponds with the conceptual framework as informed by the entitlement theory and sustainable

livelihood theory that explain the need for market support strategy to promote food security.

Another key challenge was the farmers' limited ability to access the extension services. The farmers also confirmed the ineffective delivery of the extension officers. However, officers at the AAK district corroborated the farmers' assertions but attributed the situation to poor roads. Additionally, low remuneration did not motivate these officers to effectively carry out their activities. One AEA made it clear that,

> Accessing most of the feeder roads linking the various communities is a major challenge for us since we do not have motor bikes to ply on these bad roads. The allowance for transportation for service delivery is GH₵100 for every month which is less than the amount spent on transportation every month. This de-motivates us from the services that are needed to be fully rendered to the farmers (AEA, Pra-Ewusi).

The experiences of the AEA's in this study confirmed Oxfam's (2009) contention that problems of food security in Ghana are strongly attributed to inadequate extension service deliveries which affect farmers' productivity. This confirms to what is captured the conceptual framework showing the need for extension service delivery support system for farmers to promote security. Furthermore, a deep analysis of the policy document for the district document was not explicit on the regularity of the services to be provided. In the case of the AAK district, extension services were available for the farmers on a forth night basis.

Related to the farmers' challenge in the district was limited availability and access to appropriate agriculture mechanized services. Other challenges included inadequate human resource in agriculture mechanization and post-

production infrastructure (i.e. storage, processing, transport etc.). Farmers in the Asebu (New Ebu) community defined lack of proper storage methods as a major underlying cause of food insecurity. Farmers were asked about how they store their harvested maize and cassava produce. A majority of farmers applied traditional storage methods for their maize crops other than the use of agro-chemicals. They stored maize using barns, cribs and on huts usually built in kitchens. The heat in the kitchen reduced the rate of insects' attack. The farmers believed that it is better to prepare food with maize stored with this method than with chemicals. However, the problem associated with this, is that, it does not allow larger quantities of maize to be stored.

In relation to cassava, there was no proper storage method. Some of the farmers put the tubers into water which helps to preserve it for up to three days. Other farmers expressed that they peel cassava, dry and mill it to prepare 'kokonte' and gari" which are used in Ghanaian meals. From the FBO head at Asebu (New-Ebu) he expressed about storing cassava:

> As for cassava, after harvesting, you have to consume all within three days or sell. Otherwise, you have to leave it on the farm unharvested for some time but with this, not all soils can sustain the cassava for a long time (Respondent Asebu (New Ebu) April, 2018)

Thus, this study affirms that poor methods of storing cassava and maize accounted for high pre and post-harvest loses in the district which is a major cause of food insecurity. Smallholders were handicapped when it comes to providing modern storage facilities for their crops. This illustrates the conceptual framework that explains storage facilities as a support strategy helps farmers to reduce their vulnerabilies to promote food security.

Another challenge was access to formal credit which was significantly related to farmer's educational level, extension contact, membership of Farmer Based Organization (FBO) and ownership of Bank savings account as per the findings of Sikwela and Musunje (2013) as proposed by the ET and SLT. Findings from the study revealed that farmers faced many challenges in accessing credit. From further discussions it was deduced from the Asuansi maize FBO leader that:

> the banks do not allow enough time for repayment. They start demanding for repayment within a short time, sometimes weekly or monthly … We would have wished for a longer repayment time. … we can't pay within this short time, it keeps us away from having access to credit facilities (Respondent Asuansi, April, 2018).

The implication is that, the mode of payment and demands on the credit facility to the farmers discouraged them from accessing formal credit. Hence famers resort to other sources of credit which is not enough to yield higher productivity to promote food security. From the FBO maize and cassava heads at Asuansi, they said:

First Respondent,

> Money is everything in farming, from buying of inputs to storage, we need money. In this district, access to money is the problem. Because of lack of money, we cannot cultivate large farms, we are only limited to smallholdings (Respondent Asuansi, April, 2018).

Second Respondent,

> Aside the short time for repayment of loans, … the banks require a deposit before we can open bank accounts. … we mainly

> depend on market for our farm produce for our financial base. In many instances, we do not have access to loans because we do not have money to pay as deposits (Respondent Asuansi, April, 2018).

The implication is that; financial support is very important in farming activities since acquisition of the support systems depends on it. Hence, finance is a core support system to the farmers for effective food security to promote sustainable rural development which is in relation to the conceptual framework.

Agriculture mechanization comprises technological advancement which has a significant impact on food production. The farmers in AAK district revealed that, they used simple tools such as hoe and cutlass for farming which limited their output levels. It was discovered in the study that, there were no available agriculture mechanization such as tractor, mechanized spraying machines in order to increase output levels. At the in-depth interview with the FBO heads at Asebu (Old-Ebu) one acknowledged that:

> ... improved mechanized spraying machine is available to farmers in the district when someone is awarded a best farmer but on a normal day machines are not available in the district (Respondent Asebu (Old-Ebu), 2018)

Hence, farmers in this study only accessed mechanized agriculture during completion of harvest when awarded. Limited accessibility to improved machines hindered farmers' yield which affected food security. This finding corresponds with Taylor-Sakyi (2016) as influenced by the entitlement theory and sustainable livelihood theory that inadequate mechanized machines for smallholder farmers affects food productivity which decrease food security as well as represented in the conceptual framework.

Chapter Summary

This chapter has been presented based on the farmers support systems for promoting food security in AAK district. Farmers support systems were discussed in relation to FASDEP II policy document. From the results of the entire study, it is evident that farmers support system is an important adjunct for promoting food security. Food security on the other hand focused on food availability and accessibility dimensions. The major approaches adopted to address the identified concerns were principally, collaboration with the private sector to build capacity of individuals and companies to produce and or assemble appropriate agricultural machinery, tools, and other equipment locally.

Another goal identified in the policy was the integration of gender in extension programming to ensure relevance of information to men and women and equitable access to services. This was hardly achieved as the AEAs expressed fervently that there were limited females in Women in Agricultural Development (WIAD) to train farmers on hygienic and safety practices on planting and harvesting. Additionally, officers affirmed that they have recognized the challenges of poor road conditions that link the farm area and market center, farmers' poor marketing strategies, buyers determine prices/poor pricing by buyers, the perennial price fluctuations (not stable) and climate change all affect food accessibility in the district. The major key challenge expressed in the financial delivery is that, although the farmers had no collateral and lacked credit facilities to manage the credit available, they were found to divert money.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The chapter presents the summary, conclusions and recommendations from the study. In the first section, a summary of the findings from the study is presented as discussed in the previous chapter. The second presents the conclusions drawn from the findings. Finally, the third section of the chapter offers some recommendations to the various stakeholders and looks at the areas for further research.

Summary

The study sought to explore farmers support systems and food security in the Abura Asebu-Kwamankese District in the Central region of Ghana. The specific objectives of the study were to: examine the strategic plan for food security in Ghana as applied to the AAK district; analyze the implementation strategies for food security support systems and examine farmers' experiences of the available food security support systems. The study also sought to ascertain the obstacles or problems that affect the smooth implementation of and accessibility of farmers support systems. Review of literature provided a robust evidence of the relationship between the study variables. Empirical review showed that support systems for farmers are very crucial for improving food security. The support systems help to minimize farmers' vulnerability situations such as shocks, trends and seasonalities.

The study employed the qualitative research design and the exploratory study design. A total number of 97 participants, comprising eight focus groups in seven communities, four in-depth interviewees and eight key persons were

used in the study. A total of 85 individual farmers were covered in the eight FGDs and twelve individuals. The 85 individual farmers were made up of 51 males and 34 females for the study. The four in-depth interviewees were derived from the farmer group heads in Asebu-New Ebu and Asuansi made up 2 males and 2 females.

The purposive sampling technique were used to select the farmers and the development interveners (implementing stakeholders) for the study. Primary data were collected using interview guide. Secondary data were obtained through a documentary review of existing policy for enhancing food security in Ghana in relation to AAKD (FASDEP II, 2007). The qualitative data collected was analyzed with the thematic, and documentary analysis. A summary of the major findings for this research includes the following:

Findings

The first objective focused on **the strategic plan of food security in Ghana as applied to the AAK district**. The key findings were that:

- There was clear provision in the national strategic plan for promoting food and security. Thus, all categories of crops were captured in the policy document.
- There were crop development strategy which seeks to achieve the improvement of an integrated promotion of the categories of crops, the competitiveness and profitability of crops through access to improved technological packages for increased productivity.
- National policy (FASDEP II) advocated clearly for a collaborative effort from stakeholders to ensure that resources are used efficiently and judiciously through effective management.

- The Support systems designed to be in place for the districts, and AAK in this context for the ultimate promotion of food security were comprehensive and a committed effort to provide improvement in the following; extension services delivery, access to agricultural inputs, agricultural mechanization, increased competitiveness and enhanced integration into domestic markets and financial services (credit facilities).
- The policy recognized the need for the intensification of support systems for farmers through the effective utilization of extension officers and other key stakeholders.
- The policy was very sensitive to gender development as special provisions have been made in favor of women.
- The national food security policy document was very comprehensive and had a great potential for promoting farmers' support systems and food security strategies.
- Support strategies (as documented and serving as a guide for implementation) in the AAK district were found to be in line with the FASDEP II. Key of the strategies in the district were; extension service delivery, subsidized agricultural inputs (improved seeds and agro-chemicals, agriculture mechanization, available local Markets and financial Services.

In the second objective, the **implementation of farmers' support system** in the AAK district was examined.

The following main findings emerged:

- The AAK district implements the farmers' support systems through the Agriculture Extension Agents (AEAs'). The DoFA is therefore the principal office which implements and coordinates such activities.
- The AEA office was noticed not to be well resourced especially in terms of human capital requirement as compared to workload and expectations.
- The implementation of the plan focused on training of extension personnel in relation management practices and professional development to be available to support sustainable agriculture rural development
- The AEAs training provided the requisite knowhow on the application of good farming practices which guarantees good agricultural practices (hygiene and safety) of their produce.
- There is no private company or NGO to help with the implementation of services to support farmers to promote food security especially for food crops.
- There were not enough grounds to suggest that that level of coordination and inter-agency linkages are effective. This poses a serious challenge in ensuring a well-coordinated and effective implementation of policies.
- The implementation of farmer support systems is highly focused on the monitoring and evaluation of the available support systems in the district. Other aspects are quite silent.
- The district directorate was not well resourced to take up key responsibilities particularly with funding and road construction.
- Other challenges facing the assembly in the implementation of farmer support policies were delay in release of subsidized agricultural inputs. Poor logistics,

bad road network and lack of support from other stakeholders (particularly NGOs)

The third objective focused on **assessment of farmers' experiences on available food security support systems in the AAK district**. The following main findings emerged:

- The location of the markets was mostly done after consultations with the farmers, the communities' leaders and other relevant stakeholders.
- Extension programs were sometimes organised to educate the farmers on the various avenues and strategies to market products. This was very important as it helps the farmers to develop their marketing strategies for their produce.
- The extension services provided were ineffective, insufficient, selective and discriminatory.
- The farmers indicated that they receive support from the assembly particularly in terms of access to inputs and subsidies.
- The farmers were not happy with the nature of pricing and costs of inputs. In addition, they expressed serious concern about the accessibility of the inputs as they have to travel long distance before they can access the farm inputs from the district capital.
- The pricing policy was based on cash and carry system with full input price recovery.
- Financial support and agricultural mechanization were ineffective in the district to support farmers.

The forth objective focused **Challenges faced by farmers in accessing food security support systems in the AAK district.**

- Farmers were not comfortable with the way and manner the farm inputs were supplied to them. Two of the problems here were long distance and high cost.
- Food crop farmers who were the target groups and of high interest for food security issues were not visible as compared to the citrus farmers.
- There were limited FBO activities in the district to serve as mouthpiece for the farmers.
- The farmers face challenges in selling their products. The creation of satellites markets was located in urban communities which possess serious challenges to farmers who lived in remote areas.
- The farmers also indicated that satellite markets do not have enough capacity to accommodate all their produce, especially during bumper harvest. This results in huge post-harvest losses.
- Access to extension services were woefully inadequate.
- There were inadequate roads and infrastructure support systems.
- There were storage problems in the district. The farmers go by traditional method of storing maize and cassava, there were no proper storage method and they do have not the needed funds to invest in available modern methods.
- Access to formal credit was also another problem the farmers faced. The lending institutions did not allow enough time for the farmer to repay loans. In addition, to the higher interest charges, the mode of loan disbursement did not also afford farmers effective use of the loan proceeds for the purpose of their farming businesses.
- The farmers in AAK district used simple tools such as hoe and cutlass for farming which limits the output levels.

Conclusion

The research can conclude that the existing national policies for enhancing food security and support systems is adequate to ensure that the district and the country for that matter, have enough food to feed the people. The document captures all the necessary and needed issues which, when followed and implemented strictly, will go a long way to empower the farmers to increase production. It also has a huge potential for building the capacities of key stakeholders such as DDoFA, AEAs, FBOs and NGOs for the effective implementation of support systems for the farmers. From the research, it was also realized that the available guiding strategies and thematic areas which are guiding in the implementation of support systems by the DDoFA in the AAK district are well in line with that of the national strategies. However, the strategies at the district level are quite limited in terms of scope and coverage of support systems as compared to that of the national policy document.

The implementation of farmer support systems in the AAK district is not well coordinated and structured as expected, while the AEAs are basically responsible for implementation, the roles of the other agencies and departments in the district are not well defined in terms of implementation. This leaves a lot of questions with regards to how activities and decision making are coordinated at the assembly level. The AEAs implements their strategies through sometimes the FBOs. However, it was realized that the implementation of support systems at the assembly was hugely relying on the private sector and NGOs especially in terms of funding. This is not affording the Assembly to follow their plans strictly, thus leading to implementation challenges.

The available support systems for the farmers in the district were inadequate. Most of the farmers are not having access to inputs and agriculture mechanization, tools and other resources or inputs. Though extension services are sometimes undertaken for the farmers, there are so many issues with it. The problems with the existing extension service delivery comes with wrong targeting, poor timing, and even the frequency of GAP programs. The farmers are generally not having access to finance (credit) support to increase production. Even though market facilities seemed to be available for the farmers, the farmers could not market all their produce since the infrastructures were not big enough to display all their farm produce. Additionally, very few of the farmers were privileged to have the markets closer to them as most of the markets are located around urban communities, thus leaving the majority of the farmers who are living in the remote areas vulnerable.

It is clear from the forgone conclusions that the implementation of farm support systems for food security in the AAK district is going through a lot of challenges. Availability and Accessibility of farm inputs, poor market systems, poor extension services, poor mobilization and organization of farmer-based organizations, financial support and agriculture mechanisation as well as farmers' life styles and practices towards the acquisition of the support systems. Other significant challenges that the district is facing are huge post-harvest losses, and insufficient domestic demand for farm inputs, poor road network and poor transport systems. Though several interventions are being undertaken by the district DoFA to promote food security, these interventions are woefully inadequate. There is therefore no reliable empirical evidence to suggest that the district is churning on the right path towards ensuring food security.

Recommendations

Recommendations proposed based on the findings of the study were directed at development organisations in charge of farmers support systems and food security for policy consideration. The study revealed that there is low effective collaboration of stakeholders to secure sustainable food security support system. It is therefore recommended that the Ministry of Food and Agriculture (MOFA), Ministry of Local Government and Rural Development (MLGRD) and other Non-Governmental Organizations who work towards improving the living standard of rural people should factor into their surveys and policy schemes to strengthen effective collaboration of stakeholders and revision of policies during the formulation and implementation of national policies and strategies for food security.

Furthermore, the study recommends that MoFA should strengthen extension service delivery by recruiting and retraining of more personnel. This can help promote effective demand driven extension services delivery. Also, recruitment and retraining of personnel should involve equal opportunity of men and women to promote gender balance.

Furthermore, the study recommends that subsidies from the Ministry of Food and Agriculture on prices of farm inputs and chemicals should be extended to the farm households. The Ministry must intensify its subvention programmes such as free spraying and provision of credit facilities to the farmers in order to help them embark on large scale production. The Ministry of Local Government and Rural Development must take steps to improve on rural infrastructures especially construction of feeder road networks to facilitate easy transport of farm produce to market centers.

MoFA should effectively organize Farmers' Support Systems to include interventions that arouse existing opportunities for sustainable rural development. Interventions should intensify the education of farmers to accept modern technology for increased output. Additionally, support farmer households to receive flexible loans from Financial Institutions operating in the rural areas to enable them expand their farming. This will go a long way to avert the problem of credit unavailability for the rural poor farmers. Progressive rural industrialization must also be embarked by the central government to provide avenue for farm produce to be processed into finish products. This will reduce post-harvest loss and make the rural farmers have value for money.

Suggestions for Future Research

Further studies can be conducted by using a longitudinal design to cover a broader scope of farmers support systems and food security and how it can be replicated in other geographical areas to better understand the food security situations of farmers and how best their support systems can be improved. Also, a study is required to examine collaborative mechanisms in policy formulation and implementation for food security support systems.

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APPENDICES

APPENDIX A: INTERVIEW GUIDE FOR COMMUNITY FARMERS

UNIVERSITY OF CAPE COAST

INSTITUTE FOR DEVELOPMENT STUDIES (IDS)

Introduction

The following questions are part of a survey being conducted in a partial fulfillment of the theses of a Master of Philosophy (Development Studies) degree at University of Cape Coast on the topic farmers' support system and food security in Abura- Asebu Kwamakese. This information is purely for academic purpose and therefore its confidentiality is highly guaranteed. It is hoped that the findings will inform policy decisions concerning food security support systems in Abura- Asebu Kwamakese and Ghana in general. You are therefore kindly requested to provide accurate information or answers to the ensuring questions. Your co-operation and support will be appreciated.

Identification Box

Name of Village/Town ……

Name of Research Assistant ……

Schedule Number and Date ……

Telephone no of respondent ……

SECTION A: Background information

Directions: Please fill in the Blank spaces below

1. Sex a. Male [] b. Female []
2. Number of participants ……
3. Marital composition
4. What is your level of education?
5. Household composition
6. Number of years in farming …….
7. What are the major food crops produced?
   [a] Maize [b] cassava [c] others
   (specify)……
8. What is the main purpose for farming?
9. Do you receive these support systems for farming?
   Please tell me whether the following support systems are available to you?

Available Support Systems	Yes	No
Extension services		
Agricultural inputs (Improved seeds, Agro-chemicals)		
Financial support Credit)		
Agricultural mechanization		
Market		

10. Who provide these support systems?

Suppliers of support systems	Tick	Which ones?
MoFA/ Government extension Officers		
Farmer Based Organisations		
Private Companies		
NGO		
Other (specify)		

Section B: Food Availability (Food production, ownership, acquisition and distribution, post-harvest losses)

11. What support systems are available to promote food availability all year round?
    ……
    ……
    ……
12. In terms of food production how are the following climate change issues undertaken;

i. Flood ……
ii. Pest attack
    ……
iii. Fire outbreak
    ……

13. What support is provided to reduce post-harvest losses?
    ……
    ……
    ……

Section C: Food Accessibility (infrastructure, lifestyles and preferences, human resource management)

14. At what time can food be there yet you can't buy?
    ……..
15. Which months are the hunger months?
    ……
16. What support is given to control the hunger periods?
    ……
    ……
17. How motorable are the roads in the district?
    ……
18. What support is given to ensure market accessibility?
    ……
    ……
19. How do you transport your goods to the market?
    ……
    ……
    ……
    ……
20. What strategies are given to you to market your products?
    ……
    ……

……
……
……

21. How does your produce sell on the market?

……
……
……

Section D: Challenges for accessing food security support systems

22. What are the challenges that affect you in accessing the food security support systems in relation to availability and accessibility the district?

……
……
……

APPENDIX B

INDEPTH INTERVIEW GUIDE FOR COMMUNITY FARMERS

UNIVERSITY OF CAPE COAST

INSTITUTE FOR DEVELOPMENT STUDIES (IDS)

Introduction

The following questions are part of a survey being conducted in a partial fulfillment of the theses of a Master of Philosophy (Development Studies) degree at University of Cape Coast on the topic farmers' support system and food security in Abura- Asebu Kwamakese. This information is purely for academic purpose and therefore its confidentiality is highly guaranteed. It is hoped that the findings will inform policy decisions concerning food security support systems in Abura- Asebu Kwamakese and Ghana in general. You are therefore kindly requested to provide accurate information or answers to the ensuring questions. Your co-operation and support will be appreciated.

1. Community
2. Sex
3. Category of crops participant produces
4. Marital status of participants
5. Household composition of participant
6. What support systems are available for farmers to promote food security?
7. How is the implementation in the delivery of the support systems to farmers?
8. What are the challenges that affect farmers in accessing the support systems?

APPENDIX C

INTERVIEW GUIDE FOR EXTENSION OFFICERS

UNIVERSITY OF CAPE COAST

INSTITUTE FOR DEVELOPMENT STUDIES (IDS)

Introduction

The following questions are part of a survey being conducted in a partial fulfillment of the theses of a Master of Philosophy (Development Studies) degree at University of Cape Coast on the topic farmers' support system and food security in Abura- Asebu Kwamakese. This information is purely for academic purpose and therefore its confidentiality is highly guaranteed. It is hoped that the findings will inform policy decisions concerning food security support systems in Abura- Asebu Kwamakese and Ghana in general. You are therefore kindly requested to provide accurate information or answers to the ensuring questions. Your co-operation and support will be appreciated.

For Extension Officer Respondents

Name of Village/Town ……

Schedule Number and Date ……

Telephone no of respondent ……

Section A: Food Availability (Food production, ownership, acquisition and distribution, post-harvest losses)

What measures are put in place to ensure food availability all year round?

……

1. What support systems are given to farmers in terms of planting and harvesting?

……

2. What support systems do you provide for farmers to control post-harvest losses?

……

3. What is being done about climate change issues to help farmers since it is a natural phenomenon?

a. Flood:

……

b. Pest attack:

……

c. Fire outbreak:

……

4. What are challenges that affect food availability support systems?

……

……

5. What measures do you suggest can help solve the challenges of support systems for food availability? (Food production, climate change, post-harvest)

……

……

Section B: Food Accessibility (infrastructure, lifestyles and preferences, human resource management)

How do you educate or train farmers on how to have access to food all year round?

……

6. What are some of the training methods do you employ?

……

……

7. How many times in a year do you provide the training support?

……

8. What forms of support is given to farmers to transport their goods to the market?

……

9. What support is given to farmers on how to sell their produce? (Marketing skills, strategies to improve their income)

……

10. What are the challenges that affect food accessibility support systems?

……

11. What measures do you suggest can help solve the problems concerning food accessibility support systems?

……

12. What development organisations do you collaborate to provide the support systems for farmers?

    ……

13. How do you collaborate with these organisations?

    ……

    ……

    ……