UNIVERSITY OF CAPE COAST

# PERCEIVED IMPACT OF THE AGRICULTURE AND FOOD SECURITY PROGRAMME OF THE HUNGER PROJECT ON THE LIVELIHOODS OF BENEFICIARIES IN THE MFANTSIMAN MUNICIPALITY OF THE CENTRAL REGION OF GHANA

RICHARD OMARI

2020

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BY

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Thesis submitted to the Department of Agricultural Economics and Extension of the School of Agriculture, College of Agriculture and Natural Sciences, University of Cape Coast, in partial fulfillment of the requirements for the award of Master of Philosophy Degree in Non-Governmental Organization Studies and Community Development

DECEMBER 2020

# DECLARATION

## Candidate's Declaration

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

Candidate's Signature: ..... Date:.....

Name: Richard Omari

## Supervisors' Declaration

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

Supervisor's Signature: ..... Date: .....

Name: Prof. Festus Annor-Frempong

## ABSTRACT

The Hunger Project- Ghana implemented the Agriculture and Food Security Programme in the Mfantsiman Municipality of the Central Region of Ghana to ensure food security of the households in the communities. The programme that provided inputs, supported extension delivery, trained farmers and linked them to potential buyers had not been assessed to determine the impact on the livelihoods of beneficiaries. The study used a descriptive survey design to sample 175 beneficiaries from six communities and used content validated interview schedule to measure the perceived impact of The Hunger Project's programme on livelihoods of beneficiaries. Stepwise multiple regressions were used to assess the relationship and determine research variables influencing perceived impact. The study revealed that the components of the programme were moderately effective in achieving its goals. Beneficiaries generally perceived a moderate impact of the programme on their livelihoods. However, the perceived impact of the programme on social capital was described as high. The study concluded that educational level and sex of beneficiaries influence the perceived effectiveness of the Agriculture and Food Security Programme on the livelihoods. The study recommends among others, the need for THP to work to improve market linkage component to help beneficiaries market their produce after harvest.

**KEY WORDS**

Beneficiaries

Effectiveness

Food security

Livelihood

Impact

Perceived

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## DEDICATION

To my wife, Rita Agyeibea Hanson Omari, my daughter, Afia Nyamekye Ofosu Omari and my mother, Diana Serwah Yeboah.

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| AAGDS | Accelerated Agricultural Growth and Development Strategy |
| AFSP | Agriculture and Food Security Programme |
| AWFI | African Women Food Farmers Initiative |
| CSOs | Civil Society Organizations |
| DFID | Department for International Development |
| FAO | Food and Agriculture Organization |
| FASDEP | Food and Agriculture Sector Development Project |
| ISSER | Institute of Statistical, Social and Economic Research |
| METASIP | Medium Term Agricultural Sector Investment Plan |
| MiDA | Millennium Development Authority |
| MOA | Ministry of Agriculture of Liberia |
| MoFA | Ministry of Food and Agriculture |
| NGOs | Non-Governmental Organizations |
| SD | Standard deviation |
| SLA | Sustainable Livelihood approach |
| SLF | Sustainable Livelihood Framework |
| SPSS | Statistical Product and Service Solutions |
| THP | The Hunger Project |
| ToTs | Trainer of Trainers |
| WAAPP | West Africa Agricultural Productivity Programme |
| WFP | World Food Programme |

# CHAPTER ONE

# INTRODUCTION

## Background to the Study

Food security has become a global issue over the years because of its effect on livelihoods and poverty eradication among the less privileged. Individuals are considered to be food secure when there is continuous access to adequate, harmless and nourishing food to meet the dietary needs and food preference for active and healthy life. The Food and Agriculture Organization estimated in 2017 that over one billion people were underfed whiles 22.7 percent of children under the age of five were malnourished, wasting and underweight due to lack or inadequate consumption of food. Previous statistics further indicated that out of the 795 million undernourished, 780 million came from developing regions of the world especially sub- Sahara Africa (FAO, 2015).

Countries in sub-Saharan Africa, over the past half-century, have been battling with one form of food insecurity or the other. The scan of literature on the subject of food security has revealed telling situations in some sub-Saharan countries. For example, a research conducted to investigate the interventional model for sustainable food security in the dry lands of Kenya found the food security situation to be fragile (Lemba, 2009). Fawole, Ilbasmis and Ozkan (2015) studied food insecurity in Nigeria and pointed to a startling revelation of a high prevalence of undernourishment and food inadequacy. The number of undernourished people was found to be on the increase in Nigeria. The situation in the aforementioned countries is not exclusively peculiar. A report by MoFA (2015) revealed that Ghana had issues with food security at a point

in time. The said report indicated about 1.2 million Ghanaians were chronically food insecure. Additionally, the report indicated that 12 million Ghanaians are vulnerable to becoming food insecure. The report concluded that the poor and economically vulnerable households averagely have low per capita food intake. The Ghana Statistical Service (2017) in the Ghana living standard survey round 7, reported that 2.4 million adults in Ghana could not meet a daily minimum calorie requirement of 2,900 calories per day per adult.

A study conducted by Adu, Yawson, Armah, Abano and Quansah (2018) indicated that food security and poverty at community and household levels are highest in the northern sector of Ghana compared to other regions of the country. That notwithstanding, there are also recorded incidences of food insecurity in the southern part of Ghana and there are literatures to bear credence. A study conducted in the Ketu District of the Volta Region in the south eastern part of Ghana, reported that 73.4% of vegetable farmers targeted were found to be food insecure despite their involvement in some sort of employment (Manu, Akuamoah-Boateng & Akaba, 2013). A related study by Kuwornu, Suleyman and Amegashie (2013a), has evidence that about 60 % of household in the farming areas of the forest belt in the Central Region are food insecure. Their study also revealed that the majority (67.9%) of the household in the coastal and forest belts of the region were food insecure. Furthermore, about 34% of the households in the coastal belt consume lower than the recommended calorie intake compared to food-insecure households in the forest belt.

The food insecurity and poverty at the household levels in Ghana have motivated several agricultural interventions by Government, Civil Society

Organizations (CSOs) and Non-Governmental Organizations (NGOs). About twenty government and non-governmental organizations were reported to have implemented agriculture and food security interventions in northern Ghana between 2006 and 2016 (Adu et al., 2018). Government, over the years, has partnered with other development organizations, to implement various policies aimed at addressing the challenge of food insecurity. The goal, in most instances, has been to improve the food security situation of targeted populations. Some of the policy initiatives included the following: Accelerated Agricultural Growth and Development Policy (AAGDS), FASDEP I, FASDEP II and METASIP (Boateng, Kwowe & Nyaaba, 2014). Although the state interventions yielded considerable success at the national level, community and household level food insecurity prevalence has seen an upsurge, a situation that threatens livelihoods of people. Some NGOs have complemented government's initiatives over the years in various ways through the provision of inputs, infrastructure, value addition and processing, market access and agricultural extension services and training (Adu et al., 2017).

The Hunger Project-Ghana (THP-Ghana) has been working with farming households in rural areas including the Mfantsiman Municipality of the Central Region. The primary objective of THP –Ghana, is to work with the farmers in the municipality to improve agriculture and food security. The modus operandus of THP-Ghana is to provide project communities with farming inputs such as fertilizers, insecticides and improved seeds and build their capacity using community empowerment principles. The supply of farm inputs to farmers is demand-driven based on the ability of a beneficiary to pay the subsidized cost. To increase reach and impact, the THP-Ghana usually use

Agricultural Trainers of Trainers (TOTs) as an innovation to provide agricultural extension service. The trained TOTs sensitize communities to use improved and modern methods of farming to ensure increased food production and security. THP-Ghana also introduced food bank storage technology to farmers in the beneficiary communities to reduce post-harvest losses (Takyiwaa, 2012).

Literature is scanty on evaluating the overall impact of such development interventions, especially in the agricultural sector that could drive better or improve interventions that could have longer lasting impacts on target communities. Perceived success of such interventions is in most contexts measured by the extent of reach and not the actual impact on the livelihoods of the targeted population. This is despite the clarion call by the United Nations Development Programme (UNDP) for the application necessary approaches to measuring the general success of development interventions of which agricultural interventions are inclusive. The dilemma, however, is that the lack of scientific approaches to measuring agricultural interventions especially in the area of food security makes their overall impact sometimes elusive (UNDP, 2001)

**Statement of the Problem**

Ghana has seen a rise in agriculture and food security interventions over the years especially in areas where food insecurity is prevalent. A literature search lends credence to the numerous interventions initiated by state and non-state actors with varying scopes and outcomes (Osei, Aidoo & Tuffour, 2013, Adu et al., 2018). Kuwornu et al. (2013b) asserted that much of the studies conducted on food security are concentrated in the part of Ghana

which is considered to be poorest and most food insecure. The few studies conducted in the Central Region of Ghana have sought to examine the effects of biofuel cultivation on household food security (Pappoe, 2011; Quainoo, 2010).

Literature on assessing the overall impact of agricultural interventions implemented by NGOs on the livelihoods of beneficiaries in the Central Region of Ghana is scanty despite the fact that the region has seen various interventions by NGOs. THP– Ghana has been operating in some communities of the Central Region since 2003 with the goal of ending rural poverty and hunger, and impact positively on the livelihoods of its beneficiaries. THP used the epicentre community mobilization strategy to offer numerous agriculture and food security interventions including providing input supply (seeds, fertilizer, insecticides, weedicides, cutlasses, and wellington boots), training on good agricultural practices, extension services, market access, food banks and farm credit with the objective to improving agriculture and livelihoods of beneficiaries.

The key question is, have the components of the programme been effective and made the expected impact on the livelihoods of the beneficiaries in the Mfanstiman Municipality? Very little, if any, is known from the perspective of the beneficiaries on how the programme has impacted on their livelihoods since its inception in the Mfantsiman Municipality in the Central Region of Ghana. Additionally, substantial knowledge gap exists on how socio-economic and demographic characteristics of the beneficiaries affected the overall effectiveness of the AFSP in the study area. According to Babatunde, Omotesho and Sholatan (2007) and Nesengani and Netshandama

(2016), educational level, number of dependents, gender and many other socio-economic and demographic variables can influence the extent of effectiveness of agricultural and food security programmes. However, little is known of how these variables have influenced the success of the AFSP in the study area. This is an additional gap to be filled by this research.

**Objectives of the Study**

The general objective of the study is to examine the perceived impact of the agriculture and food security programme of The Hunger Project on the livelihoods of beneficiaries in the Mfantsiman Municipality of the Central Region of Ghana.

**Specific Objectives**

The specific objectives of the study are to:

1. Describe the socio-economic and demographic characteristics of the programme beneficiaries.
2. Determine the perceived effectiveness of components of the agriculture and food security programme on the livelihoods of beneficiaries.
3. Examine the perceived impact of the agriculture and food security programme on the livelihoods of beneficiaries.
4. Determine the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived effectiveness of the agriculture and food security programme on their livelihoods.

5. Examine the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived impact of the agriculture and food security programme on their livelihoods.

**Research Questions**

1. What are the socio-economic and demographic characteristics of the programme beneficiaries?
2. Do beneficiaries perceive various components of the agriculture and food security programme of THP to be effective?
3. What is the impact of the agriculture and food security programme on the livelihoods of beneficiaries?
4. To what extent do socioeconomic and demographic characteristics of beneficiaries influence the perceived of the effectiveness of the agriculture and food security programme on their livelihoods?
5. To what extent do socio-economic and demographic characteristics of beneficiaries influence the perceived impact of the agriculture and food security programme their livelihoods?

**Hypothesis of the Study**

1. $H_0$: There is no significant relationship between sex and perceived effectiveness of AFSP on the livelihoods of beneficiaries.

   $H_1$: There is a significant relationship between sex and perceived effectiveness of AFSP on the livelihoods of beneficiaries.
2. $H_0$: There is a significant difference between the yields of beneficiaries before and after joining THP.

$H_1$: There is no significant difference between the yields of beneficiaries before and after joining THP

**Significance of the Study**

The study assessed the perceived impact of THP's agriculture and food security programme on the livelihoods of beneficiaries of the Mfantsiman Municipality of the Central region of Ghana. This study is significant because it sought the perspective of the beneficiaries on how the programme has impacted on their livelihoods since its inception in the Mfantsiman Municipality. This study is significant in many different ways. First, it provides other researchers a sample scientific framework of measuring the overall impact of interventions from the point of view of the beneficiaries. This will help researchers have benchmarks against which perceived impacts of supposed projects could objectively be assessed.

Additionally, THP Ghana could use findings, especially those on the perceived impact of the selected components of the programme, as a guide to review implementation strategies and components of the programme. Finally, the study has added to the body of knowledge with respect to beneficiaries' perception of the impact of agriculture and food security programmes on their livelihoods.

**Delimitation of the Study**

The Hunger Project - Ghana's agriculture and food security programme comprises different components namely; input supply, extension services and training, market links and networks and food bank technology. The food bank technology however was not considered in this study. THP

operates two epicentres in the Central Region; Asafra and Taidoo epicentres. This study only focused on Taidoo epicentre since all the project communities under this epicentre fall within the Mfantsiman Municipality where the study was conducted.

**Limitation of the Study**

The interview guide used for the study was structured and created no limited room for probing, prompting and clarification of questions for further information from beneficiaries involved in the study. The instrument was however made valid by analysing the responses given by the subjects for the study. The results are presented in fourth chapter of this study.

Responses from beneficiaries on impacts were based on recall and there was the likelihood of beneficiaries providing inaccurate responses to some of the items on the instrument. Ideally verifying physically could have helped. There were also issues of transparency between beneficiaries in the Taidoo epicentre and the leaders in the handling of proceeds from the project. Some respondents were aggrieved and did not participate willingly. The researcher relied on the goodwill of one of the ToTs to persuade the aggrieved beneficiaries to participate in the study. The study area was chosen because of the poverty and food insecurity levels reported in various studies conducted along the coastal and the forest belts of the municipality e.g. Kuwornu et al. (2013a) despite the numerous interventions and activities of NGOs.

**Definition of Terms**

The following are the key terms used in the study:

**Effectiveness**: Effectiveness refers to the achievement of farming objectives of beneficiaries as a result of participation in the agriculture and food security programme of THP.

**Financial capital:** Financial capital refers to either ability of beneficiaries to acquire or receive credit from financial institutions and other people, ability to save proceeds from farming activities and or the ability to decrease debt.

**Human capital:** Having access to labour (skilled and unskilled), extension service and /or the ability to pay for labour.

**Impact:** The extent to which farmers think the agriculture and food security programme has improved or retarded aspects of the livelihoods.

**Livelihoods:** Livelihoods refer to the means, activities and entitlements by which the AFSP beneficiaries make a living. The livelihood assets include; natural, physical, financial, human and social capitals.

**Natural capital:** The natural capital included ability of beneficiaries to increase yield per hectare, have access to and own lands and better farm inputs (improved seeds, fertilizers, pesticides and other agrochemicals).

**Non-Governmental Organization:** These are non-partisan, non-profit, independent, voluntary organizations that are not governed by the state.

**Perceived impact:** Judgment of the beneficiaries on the extent to which the programme components have improved their livelihoods.

**Physical capital:** ownership of: a knapsack sprayer, farm tools, electronic gadgets (mobile phones, laptops and radio sets). It also means having the

means to pay for vehicles to cart farm produce to the market for sale and also having the means to acquire planting materials.

**Social capital:** The ability to feed and support own family and other family members. It also means being able to pay your ward's school fees, funeral dues and other social commitments.

## Organization of the Study

This study is organized into five chapters. Chapter One is the introductory chapter and consists the background to the study, statement of the problem, research objectives, research questions, significance of the study, limitation of the study and definition of key terms. The review of the relevant literature which forms the basis of the study makes up Chapter Two.

Chapter Three presented as the methodology of the study. It reflected the study type, its scope, data sources and kinds of data, instruments for the study. The sampling method, sample size, ethical consideration and analytical techniques used in the study were included in Chapter Three. The fourth chapter discussed the results and findings of the research based on the objectives of the study. Chapter Five gives a summary of the findings of the study; presents conclusions based on the findings as well as relevant recommendations that can guide other researchers in the conduct of studies on the impact of developmental interventions.

# CHAPTER TWO

# LITERATURE REVIEW

## Introduction

The theoretical and conceptual frameworks, and the existing empirical studies related to the study are reviewed in this chapter. Themes under this chapter include theory of change, modernization theory, concept of livelihood and conceptualization of livelihood capitals. It also covers perception and principles of perception, impact of agriculture and food security programmes on the livelihoods as well as agricultural interventions and their effects on beneficiaries. The profile of the Hunger Project Ghana and the socio-economic and demographic characteristics of beneficiaries are also covered under this chapter.

## Theoretical Framework

It is important to understand how the agriculture and food security programme was conceptualized and implemented theoretically to be able to assess perceived impact on the livelihood of beneficiaries. The theory of change and modernization theory therefore were considered as the theories underpinning the study.

## Theory of Change

According to Weiss (1995), Theory of Change is a way of describing a set of assumptions that explain both the mini-steps that lead to the long- term goal and the connections between the programme activities and outcomes that occur at each step of the way. The theory was conceptualized in the 1950's originating from Kirkpatrick's model of learning. Theory of change has been

reconceptualised in many forms and under different disciplines over the years. The theory has assumed different names including programme theory, logic model, results chain, outcome pathway, implementation theory, impact pathway analysis, action theory among others. All these names have been used in an attempt to contextualize the application of the theory of change in different disciplines. The only contention, however, is the lack of consensus on the general agreement on its meaning (Funnell & Rogers, 2011; Stein & Valters, 2012). The single strain of element underpinning the various names and definitions is how a projected intervention when implemented will bring about a specific desired change as well as the establishment of relationships between activities and outcomes (Van Es, 2015).

The past decade has seen the theory of change gaining the attention of development organizations, especially in the areas of planning and designing, as well as in the management, assessment and scale up of planned interventions (Mayne, 2015). The theory describes key components as well as activities required to be employed in the attempt to reach a long-term goal. It outlines the intervention type, whether single or a wider community intervention, which brings about the desired change expected. A theory of change usually assumes of positions, in most cases informed by evidence in literature which is adopted by stakeholders or implementers to describe the change process. In the view Connell and Kubisch (1998), the theory in its evaluative paradigm explains the evaluation questions as well as aid in identifying what is to be evaluated.

The relevance of the theory of change to programme planners is that it helps programme planners to get an understanding of why and how their

intended projects will work (James, 2011). In the view of Weiss (1995), participants in a programme from the beginning must be made to understand the overall outcomes and impacts of the project. It is also argued that participants are made aware of approaches that will be employed to achieve desired outcomes and impacts.

The theory of change presents varied positive imperatives for programmes and policy initiatives. Prinsen and Nijhof (2015) believe that the theory when employed during the design phase of an intervention, improves planning and subsequent implementation of the initiative. The stakeholders are afforded the opportunity to clearly state or define the expected outcomes of the intended project or initiative. Additionally, it aids in determining the implementation activities that are expected to realize the desired changes or outcomes helping guide choices on how and when to measure outlined elements. Theory of change reduces the risk of tool-driven evaluations by providing specific guidelines to help decide on the tools that are likely to be used for the evaluation process (Stein & Valters, 2012).

There is some level of consensus building among stakeholders, especially with the adoption of theory of change, as Connell and Kubisch (1998) suggest, on the expected implementation activities and the likely support needed to achieve the expected or desired change. A theory of change, from the beginning, explains the conditions under which expected activities will result in both immediate as well as long term outcomes. The theory outlines the expected variables that are likely to influence the designed activities. Van Es (2015) noted that this improves the degree of predictability, attributing subsequent changes in the expected outcomes to implemented

activities. The adoption of theory of change, especially at the beginning of an initiative and reaching a consensus in the defining elements of a particular initiative or intervention minimizes the challenges usually associated with causal attribution of expected impact.

Though the Theory of Change is widely accepted and used in diverse ways in the circles of development work, its pitfalls are well documented by both academia and professionals in the field of development. For example, Pristein and Nijhof (2015), argue that there will never be enough evidence to show causality in societal processes and therefore contend the Theory of Change's ability to depict complexities in societal processes. In the view of Valters (2014) the way organizations apply the Theory of Change, suggests that change revolves around their implemented programmes and do not see contextual factors of which they are just one part. Stein and Valters (2012) concluded that in most cases, organizations fail to define the key concepts of the theory which lead to lack of understanding of what the Theory of Change is and may lead to unrealistic expectations of what it could deliver.

The Theory of Change is linked to the AFSP in the sense that Mayne (2015) indicates that for an intervention to result in a desired change, a set of activities must be undertaken to result the production of the interventions' good and services (outputs). The author posits that these outputs must reach the intended target group which upon usage, will lead to capacity change (i.e. - a change in knowledge, attitudes, skills, aspirations and opportunities) of those who received them. The AFSP also begins with activities which mobilize the communities for local community development including agriculture which

leads to a change in capacity of farmers by enhancing their knowledge, attitude, skills, aspirations and opportunities.

Mayne (2015) further noted that the change in knowledge, attitudes, skills, aspirations and opportunities of the target group will result in behavioural changes among the target group which in actual practice enable them to do things differently resulting in direct benefits. The AFSP through input supply and empowerment training programmes seeks to bring about behavioural change among beneficiaries in the form of good farming and crop management practices. The direct benefits of the AFSP are the improvements in the state of individual beneficiaries in the form of increased income levels, improved health, more productive farming and more empowerment. The Theory of Change also seeks a long-term cumulative improvement in the overall well-being of individual beneficiaries including better food security which the AFSP also espouses.

**Modernization Theory**

Tipps (1973) conceived the modernization theory as a series of processes that lead to the desired changes in all areas of human and society. The concept of modernisation became popular in the United States of America in the late 1940s and early 1950s. The idea was first proposed by the renowned German sociologist, Max Weber (1864 -1920) who referred to the concept as model of a transition from a traditional or what he describes as pre-modern to a modern society. Harvard sociologist, Talcott Parsons, is believed to have developed a paradigm and further popularized the concept. The theory assumed that, lesser developed countries or societies can adopt approaches followed by advanced countries or societies in their attempt to develop. The

theory of modernization became very popular in the social sciences in mid-20th century, went dormant and reappeared in 1999.

The theory of modernisation has found its way into the circles of development studies. According to Moon (2004), the theory, within the space of development, has assumed very unique characteristics. It gained popular acclaim, as argued by some scholars, after it became a part of a broader ideological conflict of the Cold War and its rapid acceptance by governments in the Western world. The concept buoyed the idea of development planning and implementation, especially in non-western communities. To cause the theory's widespread acceptance, Social scientists and graduate students in America fixated their attentions on issues of economic development, stable political environment as well as socio-cultural change in societies (Tipps, 1973).

The result of this intentional focus was the emanation of variant conceptual approaches which served as routes for traditional inquiry into challenges – social, economic and cultural, bedevilling societies paving the space for further tangential expansion into the fields of development. Moon (2004) traces the modernisation theories explicit acceptance in the United States of America for instance, to President Harry Truman's inaugural speech in 1949. President Truman in his speech proposed new programmes aimed at improving scientific understanding and ensuring industrial progress and engendering growth in underdeveloped areas of the USA.

Adjei (2007) contributes to the better conceptualization of the modernization theory. He suggests that modernization is a transformative route that describes tradition and modernity as mutually exclusive. For a

society to be developed or considered developed, the author argues that traditional systems must be replaced with modern ones. This argument contends that a transformation from pre-modern approaches – traditional systems or structures, to modern structures. The author thus pits modernization to development as being the same construct. In essence, in achieving modernity, any traditional factor that tends to derail the processes must be truncated and discarded. THP- Ghana's AFSP could be situated in the frames of the modernisation theory in that, the core objective of the project was to influence growth in the rural communities through the adoption of modern methods of farming that could improve agricultural production. The adoption of new methods means the community will discard traditional and indigenous methods used by small holder famers. The route to adopting new methodologies was through education.

The influence of modernization theory, specifically its impact on planning and implementation of development strategies and interventions, in Africa, lasted until about mid-1960s (Adjei, 2007; Asante, 2015). Sectors that received a lot of focus during these development –oriented times included the private sector specifically in the extractive as well as agro-forestry businesses that fell in line with feeding European and American factories. The second strand of beneficiaries included technologically infused capital intensive projects. These structures were mostly located at vantage points in cities that made them visible to residents. The trend of modernization – areas that have witnessed renewed attention and approach to modernization, were upheld by THP project. The project sought to improve investment in the agriculture as well as expose farmers to modern methodologies in agricultural production

employing the use of simple technologies that enhance productivity and improve livelihood. The agriculture and food security programme of the Hunger Project therefore can be situated in this theory thus provides a foundation for this study.

**The Concept of Livelihood**

Livelihood, conceptually, refers to the activities, entitlements, and assets by which people make a living. To some scholars, a person's ability to live in a society is solely determined by his or her capacity to make a living (Chambers & Conway, 1992). Livelihood can thus be described as, a blend of capabilities and resources available to people and the activities undertaken with those resources to make a living (Chambers & Conway, 1992). Niehof and Price (2007), similarly, considered livelihood to include all the activities undertaken by people to meet their basic needs.

The livelihood system, conceptually suggests an integrated household economy where individual members participate in either market or non-market activities (Thompson, 1995). Some studies on livelihood, including, Ellis (2000) and Masaud-All-Kamal (2013), suggest that diversification choices are often determined by microeconomic logic of farming households. This is despite exogenous trends and shocks playing an important role in driving rural people towards a diversified livelihood strategy. According to Masset (2013), key assets such as savings, education, land, labour and or access to market or employment opportunities are key in making a rural household more or less capable to diversify. A household's ability to diversify or not depends on the availability of these determinants and also the household's ability to put them to judicious use in order to achieve livelihood goals.

Researchers and scholars have classified activities included in rural livelihood portfolios (Ellis, 2000; Barrett et al., 2001). Some classifications focus on different criteria, for instance, farm vs. non-farm; on-farm vs. off-farm activities; local vs. migratory; self-employment vs. wage labour. In the argument of Alobo Loison (2015), these classifications are imperative given that it allows for understanding the nature of choices contained in the livelihood diversification processes.

Hassan and Aenis (2016) think the enterprise-based diversification, due to its projected capacity to promote a more sustained rural livelihood, is ideal. A key strategy, according to them, in reducing rural poverty is the development of small-scale, labour-intensive household enterprises. Other several studies including that of Barrett, et al. (2001), Ansoms and McKay (2010) as well as Wanjala and Muradian (2013) have revealed, in different regional and local settings, that a certain cohort of farmers enjoy higher income and safer livelihood when they combine conventional farming activities with innovative rural enterprises.

Nonetheless, there is a strain of argument that small enterprise development as a way of improving rural livelihood, can become successful if conditions such as availability or access to reasonable start-up capital, which may include land, labour, credit and infrastructure in some cases especially depending on the nature of the enterprise, protection against negative shocks, supportive structures including rural enterprise policies are prioritized.

Notwithstanding, small enterprise development can become a viable pathway towards sustainable livelihoods only if some basic conditions are made available to rural households (Senadza, 2012); access to a well-

developed market, access to marketing information, and resilience against market failure are considered (Barret, Bezuneh & Aboud, 2001, Tesfaye et al., 2011).

Significant external investments in improving access to credit, natural resources, education and training, fair market outlets services, and infrastructure are thus needed to make rural enterprise development a viable and effective component of rural livelihood security and poverty alleviation policies. Achieving a sustainable livelihood, however, is not a stand-alone phenomenon. Studies have revealed that achieving a sustained livelihood, as a means of eradicating poverty, involves a complex interplay of various factors and phenomena. Some scholars believe these factors are interrelated in complex revolving web and may include constructs such as livelihood strategies, livelihood outcomes, and livelihood capital or assets. These constructs form the core for the Sustainable Livelihood Framework Designed by DFID. Concepts such as livelihood strategies, livelihood outcomes, and assets or livelihood capital are closely related. Some studies have looked at the interplay between these constructs and how they influence each other.

**Conceptualization of the Components of Livelihood Capitals**

Research on the concept of livelihood has shown different components of livelihood. These different components, as some researchers argue, are not mutually exclusive. They are considered as inter-dependent or interrelated. According to Ellis (2000) there are five different components of livelihood. Which are in a cluster, called the livelihood capital and they include the natural, physical, human, financial or economic and social capitals. Understanding the significance of the various components of livelihood is very

essential to understanding the role each plays in attaining sustainable livelihood (Chambers & Conway, 1992).

According to Alinovi et al. (2010), these components or livelihood capitals are key determinants of strategies adopted by households in their quest to ensure improved livelihood. Less or more of any of the livelihood capitals are identified to have consequential effects on the livelihood improvement and coping. Development practitioners in the processes of implementing interventions mostly consider these livelihood capitals and weigh their projected impact on the outcome of the projects. In most cases, however, development projects and programmes are designed targeting one or two livelihood capital(s). The objective, as evidenced in some studies, is to help beneficiaries of projects improve their strategies to leverage available capitals to engender sustainable livelihood. The different livelihood capitals are conceptualized as follows;

**Natural Capital**

Dengerink (2013) conceives natural capital as comprising of basic environmental variables that produce material resources as well as support existing ecosystems. In other words, the natural capital serves as the producer of basic useful goods and services. Foster (2003), however, introduces the element of interactivity into his conceptualization of natural capital. To, produce the goods and services as suggested by Smith et al. (2001), humans would have to interact with the environment. This framework thus allows for the assessment of the current state and projected changes over time within the environment.

The conceptual underpinnings of natural capital, according to practitioners, have been designed by a group of academics from different fields of study or endeavor, including geographers, economists, ecologists and sociologist. The rationale for the multi-disciplinary approach to defining natural capital is to unify conceptions between two differing constructs; economic development and environmental conservation. This attempt as argued by Foster (2003) is also aimed at establishing a common route to understanding the relationship that exists between the disciplines of economics and ecology.

Natural capital, in recent times, has gained the attention of policymakers and it is being used as a tool to initiate programmes designed for conserving the environment. According to Wilcox et al. (2003), natural capital is an essential concept to discuss particularly because of its bearings on helping develop indicators for assessing ecosystem viability. Proponents that uphold economic view tend to split natural capital in three different categories. The categories include natural resource stocks, land, and ecosystems. Proponents consider natural resource stock to include the raw materials used in goods production. The stock could either be renewable or non-renewable. Daly (2007) however, contends there is an additional category of natural capital. He calls this, 'Cultivated Capital'. This, according to Daly (2007) is a mixed capital comprising of farms, forestry and other aqua-culture system. The proposed component is considered as not the handiwork of individuals. Ironically, it is not considered as entirely natural. According to Roseland (2000), cultivate capital is created when people utilize the identified elements of natural capital, altering the elements to suit their contextual needs.

Despite the variations in conceptualizing natural capital by different fields of study, there is one underlying convergence inherent amongst all the conceptions; that nature akin to capital as opposed to being factor of production. In some instances, ecologist and economists have used the term natural capital to explain the existing relationship between environment and society. Nonetheless, there is a strain of thinking that seems to suggest that, the inter-disciplinary approach adopted in conceptualizing natural capital makes it difficult to measure.

Scholars and researchers, in an attempt to make the concept of natural capital relevant in the realms of ecology and economics do ascribe to it certain features that define the term. One distinguishing feature is that, natural capital is not the creation of humans. Nonetheless, the capital could be altered or degraded as a result of human activity. According to Fang (2013), almost all of the material needs manufactured through utilization of the natural capital make up the largest proportion of human-based capital as well as services which sustain humans and other species.

Recent literature has shown offshoots of other sub-concepts originating from the broader debate and discussion around linked natural capital. At the epicenter of these concepts lies a critical debate around two related constructs; weak capital sustainability and strong capital sustainability. The defining difference here is what some studies consider as the substitutability of the components of natural capital (De Groot et al., 2003, Ekins et al., 2003). Proponents of the weak sustainability theory postulate that human-made as well as natural capitals can be substituted as far as overall capital stock is constant. On the other hand, proponents of the strong sustainability theory

object to the idea of substitutability between human-made and natural capitals. This theory, as argued in studies by De Groot et al., (2003) as well as Ekins et al., (2003).

Some scholars contend that natural capital, in the age of new information, is becoming a very complex construct. There is still a gap of clearly outlining and understanding the complex components and how these interact and impact both social and economic systems of the environment. As for any new concept that is going through the needed evolution, natural capital will surely pass through the furnace of controversy in order to be refined. One such controversy is valuing natural capital. There is a school of thought that the total value of natural capital can be ascertained when it is measured in monetary terms. There is a drawback, however, with this assumption. Quantifying the value of natural capital is problematic since little or no information exists on how to set benchmarks for appropriate prices for components in the environment. There is still an argument that placing a monetary value on the environment will have an adverse effect on it, nonetheless. Victor (2015) theorizes, however, that, such an approach will lead to unsustainable environmental consequences especially in a situation where the resource value becomes constant as a result of fluctuations in the pricing regime compared to the goods and services these resources produce.

It is noteworthy, however, that the ideation of valuing the natural environment is buoyed by the conception of understanding the value natural goods and services to sustained growth in an economy as well as the improvement in the livelihoods of the people. There is evidence that links natural capital to the buoyancy of both urban as well as rural communities.

**Physical Capital**

Physical capital, according to Dengerink (2013), is composed of the stock of human-made, material resources used in the production of continuous flow of income. Ellis (2000) provides another window of perspective by referring to the physical capital as the capital resulting from the economic production process. The physical capital can thus be conceptualized as the basic infrastructure and producer goods that support livelihoods. A look at the conceptualized definition will reveal two key defining elements, infrastructure and producer goods (DFID, 2000)

'Infrastructure' consists of alterations to the physical environment that help people to meet their basic needs and to be more productive. Producer goods are considered as the tools and equipment that people use to function productively. Infrastructure comprises of affordable transport, secure shelter, and buildings, adequate water supply and sanitation, clean and affordable energy and access to information. These are considered essential for sustainable livelihood. Infrastructure is considered a public good that is used without direct payment, with the exception of, that is in some case, shelter. Producer goods, on the other hand, are owned on individual or group basis. They may also be accessed through rental or 'fee for service' with the latter being common with more advanced equipment. However, there is skewed attention towards producer good since it can be measured easily.

Several participatory poverty assessments conducted on poverty found infrastructure as being at the core dimensions of poverty. It is evidential that without access to services such as water and energy, human health deteriorates

with households spending longer periods in non-productive ventures including the collection of water and fuel-wood for energy.

There are, indeed, grave dilemma associated with inadequate infrastructure. For instance, agrarian communities may see retrogression in their livelihoods if they lack proper transport infrastructure. Poor transport infrastructure will mean extension officers will find it difficult to distribute fertilizers or transmit the relevant information to farmers to increase crop yield. Poor transport infrastructure will also lead to farmers' inability to transport their farm produce to the nearest market for sale, resulting in post-harvest losses and consequently a drop in household income. In the view of Tersoo (2014), inadequate amount of producer goods can also result in constricting the productive engines of a community and can thus impact physical capital.

Physical capital, particularly infrastructure, is considered to be expensive. The argument is that it demands the huge initial capital investment and similar commitment resources, including human and financial to ensure operational maintenance. Infrastructure is perceived as an asset only when it facilitates improved services that guarantee the satisfaction of the needs of the people, especially the vulnerable.

**Human Capital**

Human capital, a key component of livelihood capital, refers to the quantum and value of labour available (DFID, 1999). Lloyd-Jones and Rakodi (2014), provide an alternative view to understanding human capital. They opine that the available labour resources of a household have both quantitative and qualitative characteristics. The two definitions underscore two critical

concepts that help in understanding human capital. Quantity, as used in the definitions, denotes the number or size of labour available to a household at a given time. The qualitative dimension refers to some socio-economic or socio-demographic characteristics including the level of education of the labour, skills and health status of members of the household. Lloyd-Jones and Rakodi (2014) note, skill training enhances peoples' ability to exploit economic opportunities. Findings by many researchers have found a strong positive relationship between poverty and low-levels of education and skills. (Ellis, 2000). A study has thus shown that quality and quantity of labour have a direct impact on the delivery of services.

To enhance household livelihood security, especially in the rural areas, a household must have human capital that is functionally literate and or educated; of pensionable age. These indicators are considered endowments that can lead to an improvement in livelihood. Health is also considered another key component of human capital. Chambers and Conway (1992) maintain in their study that most poor people consider their bodies as assets. Good health is deemed an essential asset since most rural people depend on physical labour for income in cash or in kind. Identified impairments in health will mean a subtle depletion of household resources. This will have negative consequences of the economic viability of the household in question.

The strength and livelihood security of a community depends on its stocks of human capital. An individual's access to livelihood assets and resources can be restricted by a lack of education or training. Health challenges have also been identified as a militating factor against the performance of certain essential tasks. Another challenge to the development

of human capital is nutrition inadequacy that hampers the ability of people to perform biologically, therefore diminishing the strength and endurance and this, in turn, affects working capacity (Ellis, 2000).

**Financial Capital**

Financial capital refers to the available resources that people use to achieve their livelihood objectives (GLOPP, 2008). The definition, according to some researchers is not economically thorough in itself. Some studies researching to enhance the understanding of financial or economic capital, however, adopt it since it attempts to capture an important livelihood building block which is the availability of cash or its equivalent which empowers people to choose different livelihood strategies.

Financial capital has two main sources. They are one, available stocks which include savings in the form of cash, bank deposits and or liquid assets such as livestock and jewelry. A defining feature of this source of financial capital is that it does not have any liability and usually does not entail reliance over any other person. The second source of financial or economic capital is regular inflows of money. Making any improvement on a community's financial capital, therefore, will require regular reliable inflow of funds.

Financial or economic capital, within the space of development, and other disciplines have received wide attention by researchers. In rural areas where agriculture seems to be the mainstay of the local economies, programs and initiatives have targeted on strategies to improve households' or farmer's capacities to be able to generate more capital (Alinovi et al., 2010). Improvement in livelihood is determined, in most cases, by a households' ability to be economically secure.

Agricultural-led growth has in recent times seen renewed recognition as the most efficient 'engine' for economic development among pro-poor. Agricultural growth, as argued by some researchers, supply households with their basic nutritional needs and raw materials for import. There is enough evidence to corroborate the significance of agriculture-led growth. Foreign exchange is earned when raw materials are exported. Some of the other benefits of focusing on agricultural led development agenda are that it releases labour and capital to the non-farm sector, generates rural purchasing power for non-food consumer goods and services and provide new markets for the emerging manufacturing sector, especially in developing states (Smith et al., 2006; Gollin, 2010)

Henson, (2010) contends that economic growth for rural communities in most developing countries, agriculture is the most effective and the only viable sector to generate economic growth. The author further observes that agriculture has been identified as one of the huge contributors to growth in some developing countries that have witnessed rapid economic growth in recent history, whiles those that realized low economic growth experienced a real decline in agriculture.

Growth in most poor countries is driven by improved agricultural productivity which ensures the production of sufficient food, keeping prices low and improving the livelihood, either directly or indirectly, of both farm and non-farm households. Rural growth reduces poverty in both rural and urban areas, however urban growth does not reduce poverty in rural areas. Similarly, growth in the primary sector alleviates poverty in rural and urban

areas, while growth in manufacturing has no impact on poverty either. (Datt & Ravallion, 2011)

**Social Capital**

Social capital generally is viewed as the set of norms, network, and organizations through which people gain access to power and resources that are essential in enabling decision-making and policy formulation (Dengerink, 2013). Some economists underscore the interrelationship between social capital and economic growth. Social capital in the realms of micro-economic conceptualization revolves around the capacity to improve the effective functioning of the market. The focus of analysis at this level is on how institutions, legal frameworks, and the government play a part in the organization of production and how the respective roles affect micro-economic performance.

In the view of Dodd et al. (2015), social capital can be looked as a streak of horizontal association between people whose actions have direct or indirect bearings on the productivity of the entire community. The identified interactions among the people, according to the authors, consist of 'networks of civic engagement' and social norms. Two assumptions undergird this concept of social capital. They include one, the networks and norms that are empirically interrelated. The second assumption is that these networks and norms wield the capability to influence economic decisions. What is evident in the view of Dodd et al. (2015) is that social capital facilitates coordination and cooperation for the reciprocal benefit of members of an association or a community.

According to Adams (2010), social capital should be conceptualized as variety of different entities, with two common elements. The author believes social capital comprises of some aspect of social structure and facilitates certain actions. These social aspects could be either of the two, personal or corporate actors within the structure. He further argued that there is an extension or an expansion of construct that adds to understanding of social capital. The author defines social capital to include cross-cutting associations and as well introduces a behavioral dimension. These associations, as posited, could have positive or negative implications. As bluntly put by Adam, a particular type of social capital that is considered valuable in one context could be viewed as harmful in the other. This speaks to the contextuality of associations with regards to social capital.

Some studies corroborate the relevance of social capital in coordinating growth and influencing decisions that affect the livelihood of people. A research conducted by Andrew (2010), suggests agencies mandated to deliver local public goods have the potential to impact social capital. The core argument here is that, policies planned and implemented by governments do wield a certain degree of latent power to alter the levels of social capital. A classic example is when a school decides to change its board, particularly for cohorts that believe in the participatory approach to leadership. This may lead to increased parental involvement in different activities of the school in question. This has the tendency of influencing the social capital of the community where the school is situated.

Lam and Ostrom (2010) buttress this point with a study on the design of irrigation systems. Their study illustrates how management structure of

irrigation systems predicted the circumstances under which beneficiaries made choices on taking collective actions. It was identified in their study that, a continuous cooperation or positive relationship affected variables such as cost sharing, power struggles and balance distribution.

Other studies, as claimed by Abbasi et al. (2014), tend to buffer suggestions regarding the historical and evolutionary beginnings of the concept of social capital. In the view of Abassi et al. (2014) for instance, the apparent differential economic standings of citizens in a certain part of Italy could be explained, largely by historical relationship between firms. Trust and reciprocity among firms are higher in regions where polycentric networks are the norm than in those where inherited networks are hierarchical or fragmented.

Literature indicates that social capital has become an attractive concept to governments and development agencies purposely because it gives decision-makers the opportunity to make decisions that allow for increased efficiency leading to the projected success of development interventions and programmes. It is assumed, however, that governments and other development partners are mandated with the responsibility to ensure the efficiency of social capital. This is because, its efficiency means economic security enjoyed by citizens of nations, particularly in the area of gainful livelihood. The understanding of social capital juxtaposed here is similar to an investment approach. It practically means that a community or society emphasizes on improving its social capital reaps the benefits of better social coherence that can engender better livelihoods. Researchers contend that despite social

capital's relatedness to nature, it is considered inheritable just like in the case of physical capital.

It is worth noting that these different livelihood capitals are not mutually exclusive, although literature points to a situation of research being over-concentrated mostly on just a few of them, predominantly financial or economic capital, to help households improve livelihood. Several studies have however shown evidence of some agricultural and food security programmes and projects improving the livelihood capital of beneficiary households and communities.

In a study conducted in Tanzania which compared the livelihood strategies and food security among a multi-cultural population of migrants and non-migrants, it was discovered that livelihood strategies and outcomes were not mutually exclusive constructs (Nyangile, 2013). The Author found that livelihood strategies and outcomes, as well as assets, were mediated or influenced, also, by certain external environmental factors. It is further mentioned that public and private organizations that lead the role in designing and implementing policies and strategies tend to create a more favourable environment that affects livelihoods (Nyangile, 2013). Some studies, however, are focused on understanding the vulnerability context – shocks, seasonality, trends and changes, and the designing of policies and interventions and institutional approaches that tend to focus on these vulnerabilities and subsequently influence the various livelihood capitals, as espoused by the framework, including human, natural, financial, social and physical capital.

There is a growing body of literature pointing to the need for the adoption of a multidisciplinary approach in achieving improved or sustained

livelihood among the vulnerable across the globe. Many practitioners within the development space, however, have conducted studies that sought to promote a multi-dimensional approach to eliminate poverty. The argument is that poverty can effectively be brought down to its barest minimum if economic, social and institutional sectors are empowered simultaneously and seamlessly synergize to improve the livelihood of the vulnerable.

**Perception**

Van den Ban and Hawkins (1996), defined perception as a process by which an individual receives information from his or her environment and transforms into psychological awareness. Gamble and Gamble (2002) further explained that as a process, perception involves selecting, organizing, subjectively interpreting sensory data in a way that enables individuals to make sense of the world. These two definitions clearly establish the idea that the perception process involves the use of the senses to interpret the environment.

Bampoe (2015) however revealed that there is a school of thought that believes that perception transcends just application of information by an individual. For instance, Gamble and Gamble (2002) argued that what happens in the real world may not necessarily be the same as an individual perceives a particular situation to be. This goes to suggest the interpretation of events perceived by an individual in his or her environment may contain some level of subjectivity.

**General Principles of Perception**

The general principles governing perception include; relativity, sensitivity, organizations, direction and cognitive style (Van den Ban & Hawkins, 1996)

***Relativity***

Van den Ban and Hawkins (1996) assert that an individual's perception of an issue is not absolute but relative. They explained that an individual may not be able to judge the exact weight of an object or the surface area, but may be able to tell whether it is heavier or lighter. Therefore, in designing a message, an individual's perception of any part of the message may be influenced by the context that precedes the message. The surrounding of the message is also important as it influences its perception.

***Selectivity***

According to Van den Ban and Hawkins (1996), individual's perception is selective at the moment the senses are receiving a host of stimuli from one's environment as the nervous system cannot make sense of all the stimuli available. One's nervous system, therefore, pays attention to a selection of stimuli.

Gamble and Gamble (2002) noted that individual's select only those experiences that reinforce existing attitudes, beliefs and values and tend to diminish the significance of those experiences that are not consistent with their existing attitudes, beliefs and values. This shows that perception is influenced by one's past experience or training or capacity building.

**Organization**

Individuals perception are organized in a direction that he or she can structure the sensory experience in a manner that makes sense to him or her. In a split of a second, an individual's senses process visual and aural stimuli into figures which stand out from the background. A good figure is easily attracted to a designer who wishes to incorporate that "figure" into a particular part of the message depending on how "good" is. "Closure" is also used to describe the perceptual organization (Bampoe, 2015; Sumo, 2015).

**Direction**

An individual perceives what he or she is "set" to perceive. Individuals' selection, organization, or interpretation of events is influenced by his/her mental set. "Set" is a key perceptual concept mostly used by communication designers to limit the alternative interpretation of the stimulus. One challenge of communicators when they expect their audiences to appreciate situations in a new way is their "perceptual set" (Van den Ban & Hawkins, 1996; Bosompem, 2006).

Gamble and Gamble (2002) indicated that age, motivation and educational level of a person are some of the factors which influence perceptual set. They further explained that experience influence the way in which stimulus is perceived since people of the same age may have different experience. Gamble and Gamble (1996) indicate that education can be a barrier to communication instead of facilitating it. This implies those same stimuli is perceived by individuals differently and learn lessons in life differently.

**Cognitive Style**

According to Van den Ban & Hawkins (1996), perception differs from one to another due to differences in cognitive style of individuals. A person's mental process works remarkably in different ways depending on personality factors such as a tolerance for ambiguity, degree of "close" and "open" mindedness and authoritarianism. Once it is not practicably possible for an individual to design different messages by combining all cognitive styles among his audience, "message redundancy" is recommended. This is a term that is used to describe how an individual should adopt a strategy by which the same idea is presented in a number of different ways which will appeal to most cognitive styles (Van den Ban & Hawkins, 1996).

**Measuring Impact of Agricultural Interventions**

Globally, agricultural development programmes, with different objectives and approaches have been implemented in many countries by governments, development partners and NGOs as part of overall national, regional development strategies with mixed outcome and results (Adu et al., 2018). According to Masset et al. (2011), agricultural development interventions began with a focus on increasing productivity and food production because lack of food was regarded as the cause of undernourishment.

Several studies have taken into consideration the analysis of available data to improve understanding on ways in which agricultural interventions can be leveraged on to enhance the nutritional status of some population (Pandey, Dev & Jayachandran, 2016). Researchers in the field of development have adopted different methodologies to measuring outcomes of agricultural

interventions taking into consideration the intervention's impact on food security, improved livelihood, increased household income and poverty reduction (Adeleke-Bello & Ahimolowo, 2015). According to Zhen and Routray (2003), the selection of effective indicators is relevant to the success of monitoring an implemented agricultural program or project. The two argue that preference for indicators must satisfy certain criteria – must be globally applicable, comprehensive, realistic and comparable.

Impact evaluation is widespread in current literature. In fact, there is a long history of the conduct of impact evaluation of social programmes and agricultural programmes. According to Winters, Salazar and Maffioli (2010), due to the ease in identifying indicators of impact in the social sector, impact evaluation is usually carried on social programmes but however limited in the case of agricultural interventions. Winters et al., (2010), as well as Del Carpio and Maredia (2011), pointed out that many different approaches that aim to infer causality are used for assessing the impact of interventions. Quasi and non – experimental approaches, experimental design, impact evaluation, impact studies and formal surveys were some of the methods suggested for used in evaluating the impact of agricultural interventions (Winters et al., 2010). Del Carpio and Maredia (2011) suggested that in order to effectively evaluate the impact of agricultural interventions on beneficiaries' livelihood, evaluative tools must be prepared using clearly defined guidelines ahead of implementation of the project.

According to UNDP (2009), when measuring impact, it is very important to focus on the results of the activities that brought about the impact rather than mere completion of the activities. They argued that the mere

completion of activities of a project does not fully reveal the change it brings to the lives of the beneficiaries of the project**.** Simula et al., (2010) suggested that impact must be measured on interventions that closely target specific substantive, often technically-oriented, themes to deliver verifiable impact.

Additionally, the authors pointed out that impact must be assessed with a focus on problems which simultaneous intervention in more than one impact area are necessary. UNDP (2001) explained that impact is assessed to bring out the effect of the intervention on the target beneficiaries, gender and the environment. The UNDP (2009), therefore prescribed the use of terms such as improved, strengthened, increase or reduced to reflect the global, national or local as well as the political and socioeconomic conditions in which beneficiaries of interventions find themselves.

**Measuring Effectiveness of Agricultural Interventions**

According to the UNDP (2001) effectiveness of a particular intervention is defined by the degree to which a project was able to achieve its set targets or objectives for which the project was implemented. The achievement of the objectives of a particular intervention, as construed by the UNDP, is independent of cost. Thus, the effectiveness of a project can only be seen as its ability to achieve set goals or objectives without recourse to the cost involved in achieving the set targets goals or objectives. Piciotto (2013) adds, the effectiveness of an intervention is measured by its ability to record desired changes or progress toward the expected changes factoring their comparative relevance.

The imperative of measuring effectiveness of programmes or interventions is critical to many development organizations across the globe.

For most of them, measuring a project's or an intervention's effectiveness affords them the opportunity to understand the factors that led to the success or otherwise of their interventions and draw lessons that can inform decisions on the next line of action. According to the UNDP (2001), for instance, attention should be given to the cause and effect of the intervention which will allow for accurate attribution of observable changes to the activities implemented in the project. It thus helps implementers to understand the relationships between variables in their interventions.

The assumption of the UNDP (2009) on the measuring the effectiveness of an intervention is supported by the Organization for Economic Co-operation and Development (OECD). According to the OECD (2000), the evaluation of project or programme effectiveness should take into consideration the degree to which the objectives of a project have been achieved and factors that caused those changes or otherwise. A key approach, especially during the evaluation process – as proposed by the OECD, is to attempt to understand the major factors that might have contributed to the achievement or otherwise of the project objectives (OECD, 2000). Another key point to consider in evaluating the effectiveness of an intervention is to assess how the intervention itself contributed to the outcomes intended for the programme (UNDP, 2009).

One major challenge, according to UNDP (2001), in measuring effectiveness of development programmes or interventions is the lack of credible information and defective monitoring approaches in some cases. This challenge has been further compounded by inconsistencies and little-to-no

evidence on evaluating the effectiveness of agricultural interventions especially in developing countries (Del Carpio & Maredia, 2011).

**Impact of Agriculture and Food Security Programmes on Livelihoods**

Many studies on agriculture and food security programmes have focused on finding the impact of the interventions on livelihood capitals; physical, financial, natural, social or human. A study by Ephraim and Arene (2015), for example, which sought to measure the impact of the National Special Programme for Food Security on productivity and income of beneficiary in Plateau State, Nigeria, found a positive correlation between the intervention and an increase in income of beneficiaries of the project. In other words, the project was found to have improved the financial capital of the beneficiaries.

It has been argued that a household coping strategy in times of shock and hardships, to a larger extent, depends on the available options including capabilities, assets – both material and social resources and activities (Alinovi et al., 2010). The implication is that a single livelihood capital cannot be considered as the sole factor influencing the overall livelihood improvement of a selected group of individuals. Rais et al., (2009), in the study to understand the relationship between dairy farming and livelihood improvement among women under Grameen Bank support in a Rangpur District in Bangladesh found that there was an improvement in the income of the dairy farmers. In general, the average per family total income increased by 87.51%. In a similar study conducted in Fatehgarh Sahib District of Punjab, India, by Maviet et al. (2006) on the impact of self-employment programme on dairy farming

revealed a significant increase in total income of the farmers after participation in the programme.

Ravallion (2009), did an assessment of how employment guarantee schemes affected beneficiaries' livelihood. The study found that there was position correlation between the two aforementioned variables of the study. In explaining, Ravallion (2009) mentioned the schemes were designed as stop-gap measures to bring equilibrium into the growth process. He recommends however that, one key measure to ensure a sustained growth-specifically on the income of beneficiaries, should be to find means of continuously and efficiently routing resources to the poorest in society. How, the success of the programme, especially in low-income groups, is highly dependent on identified political and economic constraints that policy makers are willing to deal with. According to him, economic constraints should be construed as the work requirements that presents the opportunity cost of additional income not gained. Ravallion (2009) reveals that factors such as local administrators may represent political constraints. Political and personal innuendos are likely worsen and to larger extent negatively impact performance. The recommendation, however, is that beneficiaries are selected only on ideal means test basis.

In a research conducted in Jhunjhunu (Rajasthan) to evaluate the impact of an agricultural intervention programme, Swarnajayanti Gram Swarojgar Yojana (SGSY), Hari and Kumawat (2006) revealed that farmers with smaller land sizes who received aid from SGSY for buffalo rearing, for instance, were marked to see increases in their annual incomes. Further findings also show that there was an increase in employment resulting from

the buffalo rearing. Farmers who were not direct beneficiaries of the programme were also identified to have benefitted from the programme.

A similar finding has been made in a study by Jayachandra and Naidu (2006). The study's main objective was to assess the level of impact of dairy cooperatives on variables including employment creation as well as creation of assets among marginal and small-holder farmers. This research revealed that there was an increase in the annual income of small-holder farmers and marginal farmers who benefitted from the project. Alinovi et al., (2010) in their study mention the adoption of multiple strategies for smallholder farmers and pastoralists including the expansion of horticulture, increased income from tourism and a greater and effective demand provided by population growth to boost the economic opportunities. These strategies are deemed as innovative means to cope with long dry spells or droughts that occasionally bring subsistence farming to a halt in most parts of northern Kenya (Alinovi et al., 2010).

Ding, et al. (2018), for instance, in their study on how livelihood capitals influence strategies among herdsmen in Inner Mongolia found a rather strong relationship between income that was generated as result of livestock rearing activities and herders' living strategies. They also found a strong relationship between income and farmers' ability to survive livelihood shocks. Results from their study revealed the choice of livelihood strategy was influenced by the physical and financial capitals. The findings were consistent with an earlier study conducted by Walelign (2016) who found that physical and financial capitals were considered instrumental to livelihood transition among herders.

In a systematic review of agricultural and food security intervention programmes in Ghana, about 44% of the studies reviewed reported increases in income levels of beneficiaries. About seven out of the 12 studies that reported increases in income levels provided numerical evidence of improved income levels of beneficiaries after a given food security intervention (Adu et al., 2018). The remaining studies, however, also showed a percentage increase in incomes without stating the base. Nonetheless, the analysis indicated that the unit of measurement for the studies that reported numerical evidence of an increase in income of farmers was inconsistent making statistical analysis difficult.

**Agricultural Interventions by NGOs and their effect on Beneficiaries**

Development interventions are programmes fashioned out by organizations which have the passion to assist the poor and marginalized in society (Okorley et. al., 2012). Dale (2004) and Asante (2015) observed that these intervention programmes may consist of a number of activities implemented by development organizations in accordance with laid down principles and rules. Development programmes as asserted by Cummings and Worley (2009) may consist of several projects.

According to Okorley et al. (2012) and Asante (2015), development interventions must be people-centred since they are meant to change and better the lives of beneficiaries. Dale (2004) also pointed out that interventions must be looked at from a bigger societal point of view based on changes it has brought in the society. Intervention therefore, must impact on the material and economic conditions of the beneficiaries in terms of alternative forms of livelihood and marketing of farm produce in rural areas. Asante (2015)

pointed out education, skill development and technology management as some of the agricultural interventions that development organizations implement to help farmers out of poverty. Development organizations are also known to create market access for their beneficiary farmers through skills training, provision of inputs, agro-processing technology, market linkages, financial support and market information (Kindness & Gordon, 2001; Vaidya, 2009).

Asante (2015) and Bampoe (2015) outlined the following activities as intervening areas where agricultural NGOs concentrate their efforts to help rural farmers to overcome poverty and hunger. These areas include; land preparation, soil fertility management, cultural practices, input supply and extension delivery. They concluded that most of these agricultural interventional activities have contributed significantly to improving the wellbeing of beneficiaries.

Arifur and Zarin (2017) observed that agricultural interventions mostly aim at increasing income of beneficiary households by enhancing knowledge and practice of farmers to achieving better productivity and efficiency in the agricultural value chains. The authors posited further that agricultural interventions result in increased access to quality inputs, knowledge on cultivation and post-harvest techniques which increase yield leading to increased household income. They further observed that better market linkage empowers farmers to negotiate for better prices for produce (Arifur & Zarin, 2017). Takyiwaa (2012) also concluded that farmers' ability to negotiate for better prices can lead to an increase in household income which may influence livelihoods positively. These positive influences may

translate into better feeding, clothing, ability to support their children's education and health.

**Perceived Effectiveness of Agriculture and Food Security Programmes on Livelihoods**

According to Adeogun and Agwu (2019), beneficiaries' perception on the effectiveness of agricultural intervention is critical to the success of the programme. The authors observed that such feedbacks help programme implementers to know what beneficiaries think about their efforts and therefore help to shape the programme. This explains why, beneficiaries' perception on agricultural interventions has become a subject of interest to many researchers.

In a study examining the perception of farmers on selected agricultural empowerment project targeting women in rural areas in Ogun State, Nigeria, Adeleke-Bello and Ahimolowo (2015) found that rural women, who benefitted from the projects generally perceived the programme to have been very effective in improving their livelihoods. Many testified the project had improved their access to credit facilities, knowledge and skills, business expansion, balanced emotion and increased income respectively (Adeleke-Bello & Ahimolowo, 2015).

An evaluation of Ghana's Medium Term Agriculture Sector Investment Plan (METASIP) on food security by Boateng et al. (2014), revealed that respondents perceived the project to have been effective in improving their livelihood. The respondents of the study cited improved productivity as result of increased access to fertilizer, seeds and access to agricultural information as the basis for their conclusion. In a study by

Bampoe (2015), on perceived effectiveness of the West Africa Agricultural Productivity Programme (WAAPP) on the livelihood of cassava farmers in the Brong Ahafo Region of Ghana concluded that, the farmers generally perceived the programme as being very effective in improving their livelihood. Specifically, the study revealed that the supply of planting materials was a major contributor to the perceived effectiveness of the programme on their livelihood. The study further revealed that input supply and extension service provision were respectively perceived as effective and moderately effective in improving the livelihoods of the farmers involved in the study. Similar finding was made by Rusike et al., (2014) in the Democratic Republic of Congo in a study on cassava farmers.

Similarly, in Enugu State, Nigeria, Adeogun and Agwu (2019) reported that beneficiaries of the West Africa Agricultural Productivity Programme, perceived the programme as effective. Agbareva (2013) also concluded in a study on an agricultural intervention in Cross- River State, Nigeria, that farmers who benefited from the project perceived the agricultural extension delivery programme component as effective in improving their livelihoods. Nyaaba (2016) studied the perception of beneficiaries on the effectiveness of fertilizer subsidy programme, in the Sene East and West Districts of the Brong Ahafo Region of Ghana. The study revealed that the programme was generally perceived by farmers as effective in improving their livelihood.

Sawant et al. (2003) submitted that educational level of farmers have a relationship with perceived effectiveness of agricultural interventions. In a study on the level of education and perceived effectiveness of extension

system in Maha, India, the authors found that people who had some level of education perceived the extension system in Maha to be effective. More (2014) however, contradicted this finding in a similar study which found no relationship between educational level and perceived effectiveness. The author established that when farmers are taken through skill-based training, both the uneducated and the educated would be able to perform similar operations.

**Empirical Studies on Perceived Impact of Agricultural Intervention on Livelihoods**

Several studies have been conducted on the perception of beneficiaries with regards to the impact of agricultural interventions on livelihood. In a study to examine perceived impact of the West Africa Agricultural Productivity Programme in Brong Ahafo Region of Ghana, it was observed by Bampoe (2015), that farmers who benefited from the programme perceived its impact on their livelihood as 'moderately high'. Specifically, the results indicated that farmers perceived the programmes' impact on their natural capitals as 'high' while the impact on physical, social, financial and human capitals was perceived as "moderately high".

In another study by Sumo (2015), project beneficiaries of the Agricultural Sector Rehabilitation Programme in Liberia, perceived the programme as having moderate impact on the livelihood of farmers. The study further revealed that respondents' perception of the impact of the programme on their financial, social, physical and financial status were moderately high.

In Kwara State, Nigeria, a study on the effect of agricultural programme (Fadama III) on livelihood of the vulnerable by Abikoye et al. (2015), revealed a 'high' perceived impact of the programme by the

beneficiaries. The authors submitted that beneficiaries perceived the impact of the programme to be 'higher' on their financial capital in the form of increased income levels. The study further reported that beneficiaries perceived the impact of the programme on their social capital as 'moderately high'.

Beneficiaries of the Cocoa High Technology Programme in the Eastern Region of Ghana indicated an improvement in all aspects of their livelihood capitals as revealed by Bosompem et al. (2011). The study further revealed that farmers perceived the impact of the programme on their natural and physical capitals as 'high'. They, however, perceived the impact of the programme on their social, financial and their human capitals as 'average'.

**Profile and Activities of the Hunger Project – Ghana (THP-Ghana)**

The Hunger Project (THP) is an international strategic non-profit organization that seeks to bring an end of global hunger and poverty particularly in Africa, South-East Asia and Latin America. The organization with funding from its partner countries empowers rural communities in these countries to become self-reliant in meeting their basic needs and build a better future for their children (Takyiwaa, 2012).

The Hunger Project-Ghana, since its arrival in Ghana, has been partnering local government bodies in an attempt to ensure local ownership of their programme or interventions. In their project communities, THP-Ghana includes the women leadership who are in many cases accountable to the local people and provide the needed resources and information (Takyiwaa, 2012). In an attempt to shift power to the local people and to strengthen local governance, THP adopts a 'Top-Down Approach' advocating for policy changes as well as the enactment of laws that will benefit local farmers.

The Hunger Project through its integrated rural community strategy mobilizes communities into clusters (epicentre) where women and men are empowered to create and run their own programmes to satisfy their basic needs. According to Takyiwaa (2012) this system has been successful in helping many men and women in many rural communities in Africa to be self-reliant. Among the support communities receive from The Hunger Project include; community banks (microfinance), clinic, pre-school centre, food bank storage facility and conference centre all in a physical infrastructure called epicentre. An epicentre is considered self-reliant within an eight-year period after several phases of support. At this point, every form of support ceases and the epicentre is considered capable to fund its own activities.

The microfinance programme was originally implemented as an independent programme in 1999 under the name the African Women Food Farmer Initiative-AWFI. The programme seeks to end hunger in Africa through training, savings and provision of credit to women farmers in Africa who are very important food producers but the least supported (Takyiwaa, 2012). In 2003, the programme was incorporated into THP's Epicentre Strategy. THP's micro-finance intervention could be considered a crucial strategic mechanism being used to engender access to capital by women and to promote their economic empowerment. Women are therefore the main target of the micro-finance programme. Consequently, 80% of loans disbursed out about Ghc 180, 000 in 2008, were given to women. The loans were disbursed through the community banks managed by members of the committee in the epicentres and were expected to be repaid on time.

According to Takyiwaa (2012), several communities were supported with farm inputs such as fertilizers, insecticides and improved seeds to ensure increased food production and security in line with their capacity building and community empowerment principles. The supply of farm inputs to farmers is demand-driven and based on one's ability to pay the subsidized cost. THP has resorted to the training and use of Agricultural Trainers of Trainers (Agric. ToTs) as an innovative way of overcoming the shortage of Agricultural Extension Officers. The trained Agricultural Trainer of Trainers (Agric ToTs) have played a major role in sensitizing communities on improved and modern methods of farming to ensure increased food production and security (Takyiwaa, 2012). The Hunger Project also facilitates the provision of food bank storage technology that is supposed to store the produce of farmers in the community to help reduce post-harvest loss. Furthermore, a school facility is provided in the epicentre to cater for the education of the children and non-educated adults in the communities.

In line with its objective to improve agriculture to achieve food security, THP trained sixty (60) farmer groups, provided eight hundred and seventy-six (876) with loans from the epicentre system and sensitized fourteen thousand, seven hundred and seventy-four (14,774) farmers on the importance of agricultural credit and micro-insurance (Takyiwaa, 2012).

**Socio-economic and Demographic Characteristics of Beneficiaries of Agriculture and Food Security Programmes**

The relevance of socio-economic and demographic characteristics of agriculture and food security beneficiaries, have been underscored by many authors. For instance, Harris-Fry et al. (2015); Chen et al. (2015); Mensah, et

al. (2013) have all contended that knowing the demographic or socio-economic characteristics will streamline the programme to benefit those who actually need help. Ephraim and Arene (2015) contended that socio-economic and demographic characteristics to a large extent affects productivity and income and the success of food security interventions. Ngema, Sibanda and Musemwa (2018) as well as Nyangasa et al. (2019) indicated that number of dependents, gender and alternative source of income are very vital in implementing food security programmes.

This study therefore, reviewed literature on socioeconomic and demographic variables such as; age, marital status, sex, educational background, farming experience, farm size, number of dependents, alternative source of income as well as yield of maize. Other socioeconomic and demographic variables the study considered were; source of agricultural credit, source of agricultural information, source of agricultural credit, market outlets, source of farm inputs and source of agricultural labour.

**Age of Beneficiaries**

Babatunde et al., (2007) assert that farmers' labour supply for food production can be influenced by age. They argued that younger energetic farmers can provide energy for larger farms and can secure off-farm jobs income compared to weaker and older farmers. They added that age influences the ability to look for, and obtain off-farm job income which younger farmers can do better. Other authors, however, believe that advance age of farmers make them more food secured since they become more experienced over time in decision making regarding risk avoidance, adoption of improved agricultural technology and other production decisions (Ojuekaiye, Ogundari

& Ojo 2006; Arene & Anyaeje 2010). The average age of farmers in Ghanaian communities was found to be between 30-54 years as evidenced by Asante, 2015; Nyaaba, 2016 and Bampoe, 2015, a scenario which is good for agricultural development in farming communities of Ghana since the younger farmers would be able to provide labour, while the fairly older ones would use their experience in farming to avert risk by taking good decisions. Oluyole, Ogundale and Agbeniyi, (2011), also submitted that farmers within this age bracket are able to bear or cope with the physical demands of agricultural production in rural areas.

**Marital Status of Beneficiaries**

The importance of beneficiary's marital status on agricultural production is found in the availability of family labour. Married farmers are expected to have available labour for agricultural production as compared to the unmarried farmers. Majority, (93.6%) of farmers in a study by Kolawole et al. (2012) on farmers' perception of 'sawah' rice production technology were found to be married. Kuwornu et al., (2013a), also reported in their study of food security status among households in farming communities in the forest and coastal belts of the Central Region that, majority (76.6%) of the farmers were married. This development was likely to increase labour availability for agricultural production as children of the family would complement the labour output of their parents which will reduce labour cost (Garba, Jamala & Shaibu, 2011)

**Sex of Beneficiaries**

Generally, studies on sex in relation to farming have revealed that more men are involved in farming than women, though farming may not be

the preserve of males. This claim however may be debatable given the plethora of literature that lends credence to a counterclaim that females are the largest agricultural food producers (Beyene &Muche, 2010).

This widely held assertion was evident in Garba et al., (2011) who reported that almost 98% of farmers involved in the sawah rice project in Nigeria were males. A study conducted by MoFA (2011) on farmer-beneficiaries in agricultural extension services in Ghana, revealed that majority of males were into farming than females. Also, more males were found to be engaging in farming than females in a developmental study conducted by ISSER (2012) on the MiDA commercial agricultural project. Asante (2015) reported a marginal increase in the number of males compared to females who were involved in the Southern Horticultural Belt study. There was however a contradictory finding in Bampoe (2015), which found majority of cassava farmers in his study to be females. He also explained that his finding was consistent with the widely held notion that cassava is 'woman's crop' hence the lower representation of men involved in the production of the crop. The above scenarios in the literature show that one cannot be quick to generalize in terms of male-female representation in agricultural production without recourse to the type of crop under consideration.

**Educational Level of Beneficiaries**

Farmer's educational level is important in agricultural production because of its implications on productivity. In their study on cassava farmers, Anyanwu, et al. (2012) pointed out that, an improvement in the educational level of farmers has a direct relationship to their orientation towards cassava production for the market. Thus, less educated farmers are less willing to

accept innovative ways of farming because they tend to be more conservative (Ani, 2004). The study further asserted that a low level of education also results in low productivity since such farmers rely on the use of indigenous farming practices. It has been revealed in various studies that farmers in many farming communities have some level of education, at the basic level or higher.

MoFA (2011), revealed that majority of farmers (71.5%) had some form of formal education compared 28.5% who had no education. Similarly, 67.4% of farmers surveyed by ISSER (2012) in the developmental study were found to be graduates of various levels of education. Garber et al., (2011) found 21% of his respondents in their study to be graduates of various tertiary institutions. Therefore, one may be wrong to assume that, farming is an occupation for the illiterates.

**Years of Farming Experience of Beneficiaries**

According to Bampoe (2015), farmers' long period of experience tends to make them more productive due to the long period of knowledge accumulation. In their view, Amaza et al., (2009) pointed out that, years of farming experience may impact either positively or negatively on productivity. They posit that years of farming experience would be positive up to a certain period after which it turns negative. They attributed the period of the negative effect of farming experience on factors such as age or unwillingness to adopt innovative techniques of farming after getting used to particular farming regimen.

The mean years of farming experience were found to be 11 years whilst the minimum and maximum years of experience was 4 years and 40

years respectively (MoFA, 2011). Asante (2015) also reported 4 to 30 as the years of farming experience in a study conducted in the Efutu Municipality of the Central Region of Ghana. It can be deduced from the above that farmers in most farming communities have a depth of experience, which can enhance their productivity.

**Farm Size Cultivated by Beneficiaries**

The size of farm of a household determines whether it should be classified as small scale, large scale or medium scale. Asante (2015) found majority of farmers interviewed in his study in the Efutu Municipality had land sizes ranging from 0.2ha to 2.0ha. Similar studies conducted by Nwanze, (2011) and Bampoe (2015) also revealed that the average household farm size ranged between 1ha to 3ha. It can be implied from the above information that most of the farmers in farming communities are small scale farmers. This may have consequences on their earnings from their farming activities. Anyanwu (2009) asserts that land size under cultivation by a household influences the returns gained from the farming activities.

**Number of Dependants**

Household size affects farm size in traditional farming communities as it influences the availability of labour. Nani (2005) pointed out that larger household guarantees availability and accessibility of labour for agricultural activities. A larger household size promotes higher productivity and food security. Nandi, Gunn and Yukushi (2011), found a positive impact of larger households on cassava farmers in Nigeria. Ojogho (2010) however argue that a larger household with a large number of non-working members can have a negative impact on the resources of the family.

**Alternative Source of Income**

According to Kuwornu et al., (2013a) and Amaza et al., (2009) farmers engage in other forms of activities to supplement their earnings from farming activities in sub-Saharan Africa. Gardening was reported as the alternative source of income for farmers in Liberia (World Bank, 2010). A study by Sumo (2015) revealed that farmers resort to providing services for other farmers, charcoal burning, and rubber tapping as some of the alternative sources of income of farmers in Liberia. Gyampoh et al. (2011), reported in their study of farming communities in the forest, coastal and savannah ecological zone that farmers engage in livestock and fowl sales, fetching of water, firewood, picking of shea nuts and 'dawadawa' as alternative sources of income to supplement their income from farming.

**Yield of Maize (kg/acre)**

The World Bank's strategy for agricultural development focus on crop area, crop production and yield as the three most significant parameters in agriculture and rural statistics (World Bank, 2010). It recognizes crop yield as one of the important benchmarks for measuring agricultural development. FAO, (2010) indicated that a total yield of 2.4 to 3.6 metric tonnes per hectare of unprocessed paddy rice was recorded in Ghana. A yield of 1.4 and 1.6 metric tonnes per hectare was recorded for maize and chilli pepper respectively in a study conducted in the Southern Horticultural Belt (Asante, 2015).

Studies have shown that, farmers who receive an agricultural intervention usually record an increase in their yield after the intervention. For instance, a study by Bosompem et al., (2011) on the perceived impact of the

cocoa hi-tech programme revealed an improvement in farmers yield after benefiting from the programme compared. Also, the yields of farmers who participated in the Fadama III programme in Nigeria recorded improvements in their yields after joining benefiting from the programme (Abikoye, Adesiji & Falola, 2015). Other studies reporting similar outcomes include Bampoe (2015) and Sumo (2015).

**Source of Agricultural Information**

The adoption and usage of agricultural technology by farmers is done through the use of appropriate media to disseminate information. Information dissemination is therefore very important for technology adoption by farmers and agricultural development. Agricultural change can occur when there is development and dissemination of right information at the appropriate time (Fawole, 2008; Asiedu-Darko, 2013). Dissemination of well-packaged, simple and easily understood information is important for technology adoption by farmers. Iwuchuku, Uodye and Onubuya (2013) explained that farmers adopt technology when they are well trained on its application.

Studies have shown that farmers have different media through which they access information. Iwuchuku et al. (2013) and Fawole (2008) cited farming associations, television, radio, neighbours, newspapers, and extension officers as some of the examples of the medium through which farmer's access agricultural information. Iwuchuku et al. (2013) further added government institutions, NGOs, research institutions and farmer organizations as additional sources of agricultural information.

A study by Asante (2015), on the organizational effectiveness of MiDA project in the Effutu Municipality, revealed that the majority (95.9%)

of the beneficiary farmers, used agricultural extension agent as their source agricultural information. The study further revealed that 52.9% relied on input dealers while 50.6%, 42.8 %, and 10.6% relied on friends, radio programmes and NGOs respectively. Adio et al. (2016), also reported in study conducted in Kwara State, Nigeria, specifically on farmers sources agricultural information, found that farmers tend to rely more on their friends than agricultural extension officers. A similar study conducted by Nakano et al. (2018), on the impact of the training on technology among rice farmers in Tanzania revealed that 92% of the farmers receive agricultural information from colleagues whiles the rest use official sources for information.

**Sources of Funds for Agricultural Production**

Access to credit is very important to agricultural production. Musiime and Atuha (2011) and Bekele (2017), identified microfinance, commercial banks, shopkeepers, money lenders, suppliers, friends and family members as some of the sources of credit for farmers. Farmers may often access credit, to hire labour or tractor for land preparation, solve problems of cash flow, buy inputs, and increase their size of production or to acquire new machinery (Musiimi & Atuha, 2011). For this reason, Bekele (2017) asserted that credit availability and accessibility are very important to agricultural development. He, however, argued that the availability of credit does not guarantee its access since most farmers are not able to satisfy the stringent conditions attached to the credit. As observed by Musiimi and Atuha (2011), farmer's ability to secure credit is influenced by their capacity to provide collateral which they may not have. Majority of stallholder farmers were found to rely

on their personal savings as well as proceeds from the sale of their produce in a study by Asante (2015).

**Market Outlets**

A market is a place for exchanging inputs for factors of production and outputs for agricultural produce (Amrouk et al., 2013). Over the years, many African countries have concentrated on increasing productivity, without paying equal attention to reliable marketing outlets where produce would be sold after harvesting (AGRA, 2010). Mutero, Manapo, and Seaketso (2016) observed that improved market access helps in preventing gluts and sustains technology adoption by farmers. They further pointed out that, farmers use the farm gate, middlemen and the open market as outlets for the sale of their produce. Asante (2015), also added aggregators, exporters and the local markets as some of the avenues through which farmers sell their farm produce.

It was found in a study by Mutero et al. (2016), that 79% of farmers involved in a study conducted in the Ethekwini Metropolitan, South Africa on the operational challenges of smallholder farmers, sold their produce at the farm gate. The study further reported that 41% sold their produce to middlemen while 10% indicated that their produce was sold on the open market. Asante (2015) also indicated that 94% of the MiDA beneficiaries in the Effutu Municipality used the open market to sell their farm produce. It was further revealed that 59% of the farmers used the farm gates in selling their produce while 37.6% and 32.4% sold their produce to aggregators and exporters respectively.

**Source of Farm Input**

Farm inputs are very essential to agricultural development and reduction in rural poverty (Belt et al., 2015). It has been established that for agriculture to develop, farm inputs must be made accessible, available and affordable to farmers (AGRA, 2013; FAO, 2013 &World Bank, 2013). SMART Project (2012), observed that one of the major constraints limiting improved agricultural productivity among smallholder farmers is the cost of access to inputs such as fertilizers, insecticides, improved seeds, and farm equipment. Seini et al. (2011) also observed that lack of appropriate framework on the marketing and supplying of farm inputs are also contributors to factors limiting the productivity of small-scale farmers.

Access to farm inputs is said to lead to improved agricultural productivity and increased profit thus promoting increased agricultural investment. Wholesale shops, local market outlets state agricultural institutions and NGOs are some of the sources input for farmers (Belt et al., 2016; FAO, 2014; Sieni et al., 2011). The MiDA study in the Effutu Municipality by Asante (2015) found majority of the beneficiaries relied on the open market for their inputs while 17% had their inputs from MoFA. It was further reported by the study that 5.9% of the respondents relied on NGOs for their farm inputs.

**Source of Agricultural Labour**

Gollin (2019), observed that apart from land, the most important input in agricultural production is labour, therefore, its availability, use pattern, and intensity is of key interest to many in the world especially, in sub- Saharan Africa. The number of persons in a household and strength level as well as

their education and skill sets, to a larger extent, serves as a foundation for the development of a household's livelihood strategies (Takane, 2008). Among smallholder farmers, the main source of labour in agricultural production is family labour which is supplemented by hired labour on seasonal basis (FAO, 2015). Gollin (2019) indicates that agricultural labour is important at all levels of agricultural production including land preparation, planting, weed control, harvesting and storage of produce, marketing of agricultural produce, maintenance of agricultural tools and equipment.

**Conceptual Framework of the Study**

To determine the perceived impact of the agriculture and food security programme, the study considered the perceived impact of the components such input supply, extension services and training, farm credit, storage of produce, and market link and networks on the livelihood of the beneficiaries.

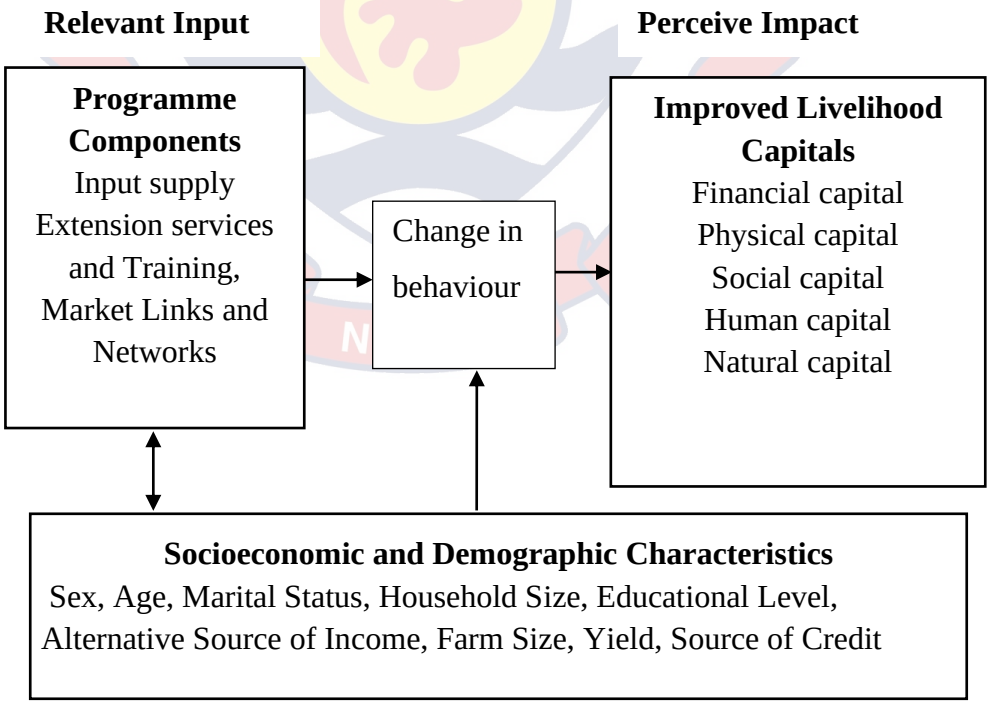


***Figure 1*: Conceptual Framework for Assessing the Perceived Impact of the AFSP on Livelihood in the Mfantsiman Municipality**

Source: Adapted from Sumo (2015).

Literature has revealed that when farmers receive the relevant inputs, it leads to a change in behaviour which translates into an improvement in their livelihood (Sumo, 2015). These relevant inputs are those farmers need to improve their production and their livelihood. The relevant inputs in the study are programme component such as; input supply (seeds, insecticides, fertilizer, cutlasses) and other services such as extension services and training, farm credit, storage facilities and market links and networks. The provision of these inputs and access to services such as extension and training on good agricultural practices may lead to improved productivity and increased food production. This may eventually lead to improvement of the livelihood capitals of farmers.

The improvement in livelihood however can be caused by factors other than the programme components. Literature revealed that socio-economic and demographic characteristics of beneficiaries such as sex, source of income, marital status, household size, and educational level, age, farm size, and yield among others may have influence on the improvement in livelihood of beneficiaries. These factors may help explain the variations in the perceived impact of the Hunger Projects' agriculture and food security programme.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## Introduction

The methodology and procedures used to examine the perceived impact of the agriculture and food security programme of The Hunger Project on the livelihood of beneficiaries in the Mfantsiman Municipality of the Central Region of Ghana are presented in this chapter. Sections of this chapter include the study area, research design, study population, sample and sampling procedure, instrumentation, collection of data and analysis procedures.

## Study Area

The research was conducted in the Mfantsiman Municipality of the Central Region of Ghana. The Municipality lies within latitude 5º.07′ to 5º.20′ north of the Equator and between longitude 0º.44′ to 1º.11′ west of Greenwich meridian. Dominase, Anomabu, Mankessim, Kormantse, Abandze, Narkwa and Yamoransa are the major communities in the Municipality. It is bounded to the east by the Gomoa West District, west by the Ekumfi District, south by the Gulf of Guinea and north by the Ajumako-Enyan- Essiam District. The Municipality covers a total land area of approximately 612 square kilometres (Ghana Statistical Service, 2014). The population of the municipality was estimated at 144,332 at the census in 2010. About 55 percent of the inhabitants are females. A staggering proportion of the population the municipality, about 64.9 percent, is located in urban settlements. About 35.1 percent people living in rural settlements (Ghana Statistical Service, 2014).

In terms of agriculture, almost every three out of ten households in the Municipality are engaged in agriculture. The majority (83.4 per cent) of farmers grow crops while the remaining is into livestock farming (Ghana Statistical Service, 2014). The vegetation is mainly secondary forest with thickets of an average height of 4.5m. The coastline is about 40km long with temperatures ranging from 24°C to 28°C and a relative humidity of about 70 percent. There are two seasons of rainfall with peaks in May-June and October. The total annual rainfall ranges between 90cm and 110cm along the coast and between 110cm to 160cm in the hinterland. The Harmattan is experienced between November and February each year. The available land for agriculture is about 49,000ha. Farmers predominantly cultivate vegetables, particularly garden eggs and pepper, tomatoes, cabbage and okra. Crops including maize, cassava, plantain, pineapples and also citrus, oil palm, cocoa, sugarcane and cashew are also grown in the Municipality.

According to the Ghana Statistical Service (2014), there are few industries found in the Municipality. These include; local gin distilleries at Mankessim, Abanze and Egyaa No.1, 2 and 3. Other industries include soap making at Mankessim, boat building at Anomabo, sawmilling at Mankessim and Biriwa, sachet water production at Saltpond and Mankessim. Salt production is also carried out on a large scale at Adambo near Anomabu. The NGOs in the Municipality are Adventist Development and Relief Agency (ADRA), World Vision International (WVI), International Association for the Advancement of Women in Africa (ASAWA), Plan International, Compassion International and The Hunger Project.

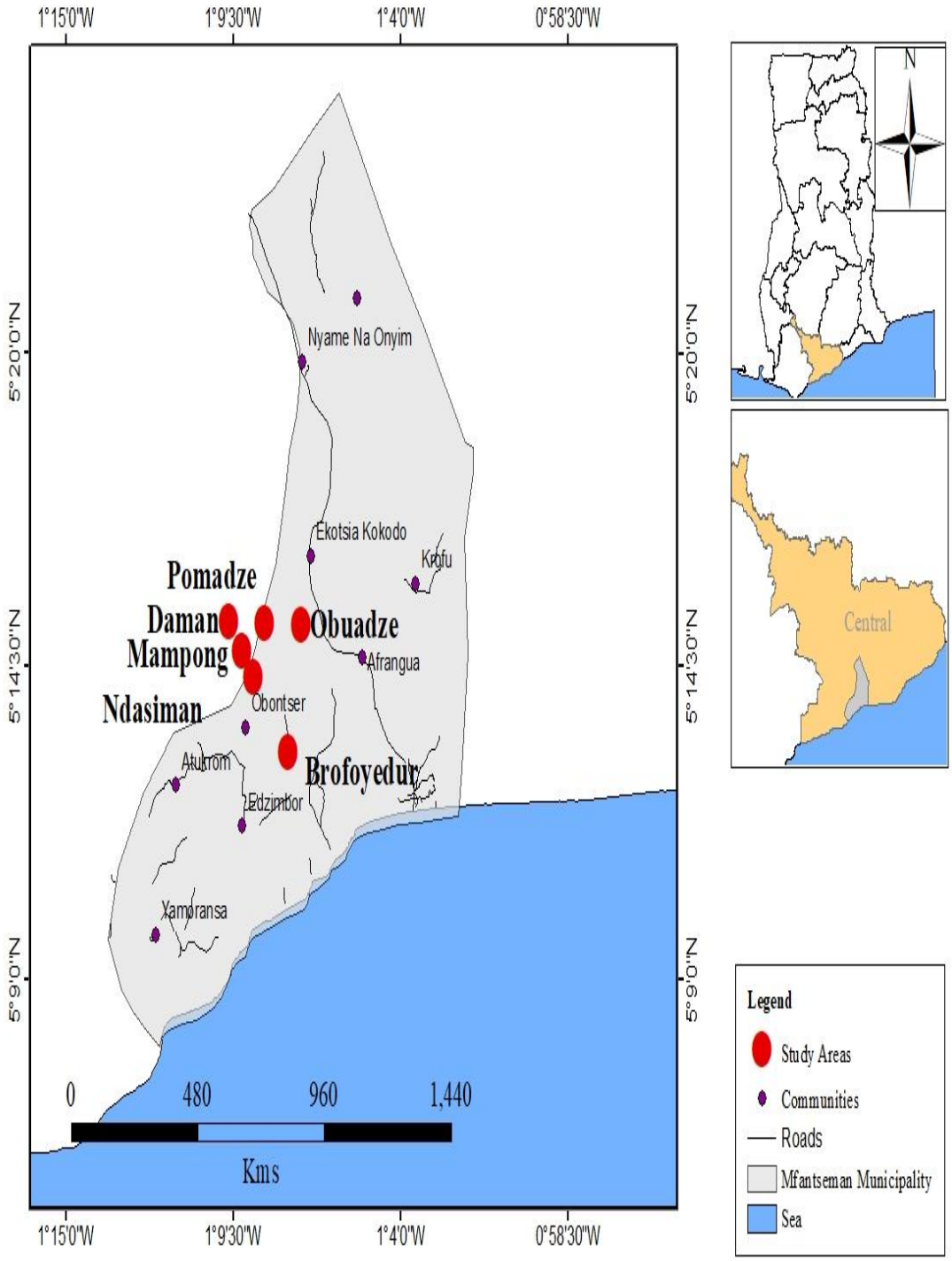


***Figure 2*: Map of Mfantsiman Municipality, showing the study communities in red dots**

Source: Department of Geography and Regional Planning, UCC

## Research Design

The research design defines the structure of the research, the nature of the hypothesis and the variables involved in the research (Sarantakos, 2005). The study used descriptive survey research design to describe the behaviours and attitudes of the THP agriculture and food security beneficiaries through observation and data collection in the natural environment (Vanderstoep & Johnson, 2009). Many beneficiaries of the agriculture and food security programme in the Mfantsiman Municipality were systematically asked the same questions on the perceived impact of the components of the programme on their livelihoods (Neuman, 2003). The survey design was adopted because it suited the collection of data on perception of a programme (Bennett, 1979). It was flexible and relatively cost effective. The researcher found it simple to collect primary data (Baker, 2001).

## Study Population

The target population is the population the research seeks to study based on the research problem identified (Banerjee & Chaudhry 2010). The study population consisted of 320 beneficiaries (Table 1) of AFSP of The Hunger Project in the Mfantsiman Municipality in the Central Region of Ghana.

**Table 1: Population of Beneficiaries of THP's AFSP in the Six Study Communities in Mfantseman Municipality**

| Community | Male | Female | Total |
|---|---|---|---|
| Brofoyedur | 54 | 7 | 61 |
| Damang | 41 | 2 | 43 |
| Mamong | 42 | 2 | 44 |
| Ndezimam | 56 | 2 | 61 |
| Oboadzi | 40 | 5 | 44 |
| Pomase | 61 | 4 | 67 |
| Total | 294 | 26 | 320 |

Source: Field survey, Omari (2019)

**Sample Size and Sampling Procedure**

According to the Krejcie and Morgan (1970)'s table for determining a sample size from a given population for research (Appendix B), for a population of 320, a sample size 175 were deemed adequate to represent the population to determine the perceived impact of THP's programme. According to Stevens (1996), 15 subjects are enough for a reliable regression equation analysis in social science research.

This study adopted a multistage technique to select respondents for the collection of data. A three stage was used due to the difficulty in selecting respondents at a go (Banerjee & Chauhry, 2010). The first stage was the purposive selection of the Taido Epicentre out of the two epicentres in the Central Region. This is because the communities making up the Taido epicentre are all located within the Mfantsiman Municipality. At the second stage, a simple random sampling method was used to select six out of sixteen communities through the replacement balloting method. The names of all the communities under the epicentre were written on different pieces of papers.

The papers were well shuffled and randomly picked to constitute the study communities. At the end of the exercise, Pomase, Oboadze, Mampong, Ndazimam, Brofoyedur and Damang were sampled.

The third and final stage involved the selection of respondents for the study. A sample frame consisting of three hundred and twenty beneficiaries (consisting of 294 male and 26 females) was obtained from the agriculture TOTs in the six communities earlier selected for this study. Due the lower number of females on the sample frame, the researcher used census to ensure that all the females from the selected communities were involved in the study to ensure representativeness in the in the sampling with regards to females (Sarantakos, 2005). The male respondents were however selected through simple random sampling. The lists of males from each of the six communities, were cut into pieces, folded and placed in a bowl and well shaken. With the help of the TOTs, respondents were selected for each of the communities through the replacement balloting method. This was again done to prevent sampling error and to eliminate biases (Banerjee & Chaudhry, 2010). The number of beneficiaries selected in each of the study communities to constitute the sample is represented in Table 2 below.

**Table 2: Sample Size Selected for the Study**

| Community | Male | Female | Total |
|---|---|---|---|
| Brofoyedur | 30 | 7 | 27 |
| Damang | 17 | 2 | 19 |
| Mamong | 18 | 2 | 20 |
| Ndezimam | 32 | 2 | 37 |
| Oboadzi | 16 | 5 | 20 |
| Pomase | 36 | 4 | 42 |
| Total | 149 | 26 | 175 |

Source: Field survey, Omari (2019)

**Instrumentation**

Structured and content validated interview schedules were developed as the instrument for the study. This was a useful method because of its openness, quantitative nature and guiding mode (Sarantakos, 2005). The interview schedule consisted of three main parts (A, B and C). Part A sought information on the perceived effectiveness of the components of the agriculture and food security programme of the THP. The perceived effectiveness was measured on Likert–type scale 1 to 5. The scale was interpreted to respondents as follows: 0 = cannot tell, 1 = Very Lowly Effective, 2 = Lowly Effective, 3= Moderately Effective, 4 = Effective, 5 = Very Effective. The components measured in part A include input supply, extension and training and market links and networks see (Appendix A).

Part B sought information on the level of the perceived impact of the agriculture and food security programme on the livelihood of beneficiaries. The perceived impact of the programme was measured using five-point Likert - type Scale. Respondents were asked to indicate 0 =‘cannot tell’, 1 = ‘Very Low Impact’, 2 = ‘Low Impact’, 3 = ‘Moderate Impact’, 4 = ‘High Impact’ and 5 = ‘Very High Impact’. In addition, they were asked to give remarks for each of the choices they made for each of the scales.

Part C solicited information on the demographic and socioeconomic characteristics of beneficiaries. They were asked to provide information on; sex, age, marital status, educational qualification, number of dependents, type of crop grown, farming experience, size of farm, yield, primary occupation, source of agricultural information, source of credit, market out, source of

inputs, type of technology use and source of labour. These were measured using close and open ended questions.

**Validity and Reliability**

According to Patton (2004) and Wallen and Fraenkel (2001), a valid instrument is one which is able to measure what it is intended to measure accurately and achieves the purpose for which it is designed. The face validity was checked by the researcher through assembling the relevant literature base on variables and objectives. The content validity was checked by Mr David McMensah the officer of THP who was in charge of the programme. The supervisor scrutinized the instrument to ensure construct validity. An expert judgment (Tannor, 2014) was therefore used to ensure validity of the instrument.

**Pre-Testing**

The instrument was pretested on 20 beneficiaries of the programme in Anomansa one of the beneficiary communities under the Taido "Epicenter" in May, 2019 with the help of three enumerators. The data collected were entered into the SPSS version 25 to generate the Cronbach Alpha. This was used to determine the internal consistency of the Likert type scales. An instrument is said to be reliable when its Cronbach alpha value is 0.7 or more (Pallant, 2005). Since the Cronbach alpha values were lower than 0.7, the instrument was reviewed in order to strengthen it. Following the review of the research instrument, it was administered to a different set of 20 beneficiaries in the Anomansa community which was not part of the survey. The Cronbach's Alpha coefficient for the three sections improved; 0.724 for input supplied, 0.710 for extension service and training and 0.868 for market links and

networks, indicative of the fact that the instrument was reliable (Pallant, 2005). On the livelihood subscale, financial capital, physical capital, human capital, social capital and natural capitals scored 0.85, 0.84, 0.89, 0.85 and 0.88 respectively as shown in Table 3.

**Table 3: Reliability Co-efficient of the Instrument**

| Subscale | Number of items | Cronbach's alpha | |
|---|---|---|---|
| Components of the Programme | | 1st Pretest | 2nd Pretest |
| Input supply | 6 | 0.45 | 0.72 |
| Extension and training | 3 | 0.51 | 0.71 |
| Market links and networks | 5 | 0.59 | 0.87 |
| Livelihood Capitals | | | |
| Financial capital | 8 | 0.45 | 0.85 |
| Physical capital | 4 | 0.44 | 0.84 |
| Human capital | 5 | 0.39 | 0.89 |
| Social capital | 3 | 0.45 | 0.85 |
| Natural capital | 4 | 0.46 | 0.86 |

Source: Field survey, Omari (2019) n: 20

**Data Collection**

Three enumerators were trained to help the researcher administer the instrument. The training involved explaining the meaning and interpretation of each of the items on the interview schedule. This was to equip them with the requisite skills needed to solicit information from the beneficiaries. The training was also meant to help the enumerators acquaint themselves with objectives of the study and the content of the interview schedule. After the training, the researcher went to the field with the enumerators for data collection. Before the instrument was administered the purpose of the study was explained to respondents and respondents were assured of confidentiality.

The validated and pretested instrument was administered in the local dialect of randomly selected respondents and their responses were recorded on the interview schedule. The data collection lasted for four weeks, between 15th May and 12th June, 2019. The long period resulted from the unavailability of respondents in the study communities. The period was a farming period and the respondents were always on their farms. With the help of the ToTs, the researcher was able to schedule convenient time with respondents. Specifically, late evenings on week days and Sundays after church service were scheduled with the respondents.

**Data Analysis**

The field data was ordered and cleaned by removing responses to open-ended questions especially those that were modified to mean what it was meant. It was then coded and entered. Frequencies, means, standard deviation, correlation and regression from the Statistical Product and Service Solutions (SPSS v.25) were generated to analyse the appropriate data. Each specific objective was analysed as follows:

The objective one, sought to describe the socio-economic and demographic characteristics of beneficiaries. Frequencies, percentages, mean and standard deviation were computed to describe the data. The objective two, determined the perceived of effectiveness of the components of the agriculture and food security programme. Means and standard deviation were used to describe the perception of respondents.

The objective three examined the perceived impact of the agriculture and food security programme on the livelihood of beneficiaries. Means and standard deviation were used to examine the level of impact of the agriculture

and food security programme on the livelihoods of beneficiaries. The objective four was to determine the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived effectiveness of the AFSP on their livelihood. The Pearson's Product Moment Correlation Co-efficient and multiple stepwise regression were used.

Pearson's Product Moment Correlation Co-efficient was used because, variables were observed naturally in their environment without any attempt to manipulate the relationships that were observed. Moreover, no causality was anticipated at this stage. The basis was to determine the magnitude and direction of the relationships (Vanderstoep & Johnson, 2009). The Davis (1971), correlation coefficient convention (Appendix C) was used to describe the magnitude and direction of the correlation coefficient because of its detailed nature and efficiency (Miller, 2005). Linear stepwise regression was used since the study sought to determine the specific line that provides the best fit line that explain the variations in the attributes of perceived effectiveness of the programme (Huberty, 1989). According to Gravetter and Wallnau (2005), regression is used for finding the best- fitting straight line for various attributes of perceived effectiveness of the components of the programme. The regression line results from a linear can be seen as follows: $Y=a+\beta_1 X_1+\varepsilon$ where; Y= perceived effectiveness of the programme, a= constant which describes the mean response value when all variables are set to zero. $\beta_1$= parameter of the independent variable $X_1$and $\varepsilon$ = error term

Finally, objective five sought to examine the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived impact of the AFSP on their livelihood. The Pearson's Product

Moment Correlation Co-efficient and multiple stepwise regression model of $Y=a+\beta_1X_1+\varepsilon$ where; Y= perceived effectiveness of the programme, a= constant which describes the mean response value when all variables are set to zero, $\beta_1$= parameter of the independent variable $X_1$ and $\varepsilon$ = error term.

**Collinearity Diagnostic Test**

Collinearity test was conducted to analyse the variance of inflation factors (VIFs) and tolerance of independent variables of the study. Collinearity occurs when independent variables are strongly correlated (r = 0.9 and above) in a regression analysis (Pallant, 2005). VIF shows how much variance of the coefficient estimates multicollinearity. Bosompem, Annor- Frempong and Achiaa (2013), suggested that VIF more than 10 is a cause for worry. Pallent (2005) also suggested that very low (less than 1) Tolerance Value implies that the independent variable in the model have strong correlation with each other, indicating the existence of multicollinearity and hence the need to eliminate one of the strongly inter-correlated variables. The VIF and Tolerance values in Table 4 indicate that the study was not affected by multicollinearity.

**Table 4: Collinearity Diagnostic Test**

| Dependent Variable | Independent Variables | R-Square | VIF | Tolerance | P-value |
|---|---|---|---|---|---|
| Perceived | Level of education | 0.08 | 1.05 | 1.00 | 0.00 |
| effectiveness | Sex (dummy) | 0.03 | 1.05 | 1.00 | 0.01 |
| Perceived | Sex (dummy) | 0.07 | 1.05 | 1.00 | 0.00 |
| impact | Level of education | 0.04 | 1.05 | 1.00 | 0.00 |

Source: Field survey, Omari (2019) n = 175

**Dependent and Independent Research Variables**

The independent variables in the study were the demographic and socioeconomic characteristics of the beneficiaries such as sex, age, educational level, household size, yield, and years of farming as well as sources of agricultural input. Other independent variable the study considered were sources of agricultural credit, labour and agricultural information.

The dependent variables in the study are the perceived impact of the food security programme on livelihoods assets:

i. Natural capital
ii. Physical capital
iii. Financial capital
iv. Human capital
v. Social capital

# CHAPTER FOUR

# RESULTS AND DISCUSSION

## Introduction

This chapter discusses the results based on the objectives of the study. The chapter has been segmented into five sections. The first section discusses the socio-economic and demographic characteristics of the beneficiaries of the programme. The second section also presents the perceived effectiveness of the various components of the programme which includes; input supplied, extension service and training as well as market links and networks. The third section discusses the perceived impact of the programme on the various livelihood capitals of beneficiaries. Section four deals with the extent to which socio-economic and demographic characteristics influence the perceived effectiveness of the AFSP on the livelihood of beneficiaries. The fifth and final section of this chapter discusses the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived impact of the agriculture and food security programme.

## Socioeconomic and Demographic Characteristics of Beneficiaries

This section of the study discusses the results from the analysis of data on the socio-economic and demographic characteristics of the respondents. The variables discussed are sex, age, educational level, marital status, household size, farm size cultivated and primary occupation. The farming experience, years of working with THP, yield in maize before and after joining THP as well as source of agricultural information of beneficiaries were also included. Furthermore, market outlets for selling produce, source of input and source of agricultural labour were also considered in this section.

**Sex of beneficiaries**

The results in Table 5 revealed that majority (85.14%) of the respondents were males while the female beneficiaries accounted for 14.86 percent. This figure confirms the widely held notion that agricultural production is dominated by male household heads as compared to females. This result agrees with the findings of Garba et al. (2011) which concluded that majority of the beneficiaries of the "Sawah" rice project were males. MoFA (2011), ISSER (2012) and Ephraim and Arene (2015) in separate studies concluded on similar finding. Lower number of female beneficiaries compared to males. Bampoe (2015) found, contradicts the findings of this study. The reported higher number of females than males was in a study that determined the perceived effectiveness of the WAAP project in the Brong Ahafo region of Ghana. The author attributed his findings to the fact that participants were into harvesting and processing than production of other food crops.

**Table 5: Sex of Beneficiaries**

| Sex | Frequency | Percentage |
|---|---|---|
| Male | 149 | 85.14 |
| Female | 26 | 14.86 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

**Age distribution of beneficiaries**

Age is considered as a very important demographic characteristic in agricultural production and food security as it defines the level of productivity of farmers. The system of farming in the study is mainly traditional and demands exertion of energy. Sumo (2015) contends that older farmers are less

productive as they are unable to perform farming operations such as land clearing and felling of trees which are considered physically demanding. However, older farmers are more likely to be experienced, food secure and hence avert risks (Arene and Anyaeje, 2010). The authors conclude that older farmers make good decisions and are likely to adopt innovative methods of farming.

It can be observed from Table 6 that the age of beneficiaries ranged from 29 to 71years. The mean age was 46years with a standard deviation of 4.9years. More than 70% (70.4%) are 50years or below. This agrees with (MoFA, 2011; Asante, 2015 & Nyaaba 2016) which revealed that the average age of farmers in most farming communities was 50years or below.

**Table 6: Age of Beneficiaries**

| Age (years) | Frequency | Percentage |
|---|---|---|
| Below | 70 | 34.40 |
| 40-50 | 63 | 36.00 |
| 51- 60 | 36 | 20.60 |
| Above 60 | 16 | 9.10 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019) n =175, mean = 46, Min = 29, Max = 71, SD=9.46

These findings are more positive for agricultural development and food security since most of the farmers are within their productive age of 50 years or below and are likely to have the energy required for the rigours of farming operations. The mean age of 46 implies that most respondents were within the productive age and would be able to cope with the drudgery associated with agricultural production in the rural communities (Oluyole, Ogundale & Abyaniyi, 20011).

**Educational level of respondents**

The study revealed that most (92.6%) of the beneficiaries had some level of formal education ranging from primary, Middle school and Junior High School (Table 7). Majority (81.20%) of the respondents had either JHS or MLSC while a little over one tenth have had primary education. The remaining 7.4% however had no formal education.

**Table 7: Educational Level of Beneficiaries**

| Educational level | Frequency | Percentage |
|---|---|---|
| No formal education | 13 | 7.40 |
| Primary | 20 | 11.40 |
| JHS/MSLC | 142 | 81.20 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

The higher number of farmers with some level of formal education agrees with a study by MoFA (2011) and conforms to general notion that majority of farmers in farming communities in Ghana have some level of formal education. The acquisition of some level of education by beneficiaries is expected to give them level of confidence needed to work with development agents and adopt innovations (Roger, 2003). This finding is also good for agricultural development and food security project of THP because farmers in the study area are likely to be less conservative and would be willing to adopt improved farming practices.

According to Anyanwu et al. (2012), farmers who have some degree of education express willingness of adopting technology and improved farming practices. Sumo (2015) submitted that formal education improves farmers' managerial skills and human capital in general. In terms of food security,

farming families in the study's target population are likely to be more stable as a result of the level of formal education among beneficiaries as suggested by Nasengani and Netshandama (2016).

**Marital status of beneficiaries**

Table 8 presents the marital status of respondents. It can be observed that the majority (76.6%) of the respondents were married, the rest (33.4%) of the beneficiaries were either divorced or separated.

**Table 8: Marital Status of Beneficiaries**

| Marital status | Frequency | Percentage |
|---|---|---|
| Married | 134 | 76.60 |
| Divorced | 21 | 12.00 |
| Widowed | 20 | 11.40 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

This finding is in agreement with Kuwornu et al. (2013) who reported that 76.6 percent of respondents in a study on food security in the coastal and forest belt of the Central Region of Ghana were married. The high number of married household heads may be advantageous in a labour intensive venture like farming. On the other hand, it could also mean farmers or beneficiaries who are single will have to depend on hired labour. It is expected that family labour in addition to hired labour would be available to household heads that are married (Amaza et al., 2009).

**Number of dependants in beneficiaries' household**

On the average, there were five dependants per family in the study area. The minimum number of dependant was two while the maximum was 10 as presented in Table 9. More than two thirds (70.9 %) of the respondents had

household sizes between one and five. The rest of the beneficiaries (29.1%) had household sizes between six and ten.

**Table 9: Number of Dependants in Beneficiaries' Household**

| Dependents | Frequency | Percentage |
|---|---|---|
| 1-5 | 124 | 70.90 |
| 6-10 | 51 | 29.10 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019) Mean=5, SD= 2, Min= 2, Max=10

Dependants in the household are regarded as human capital and a source of labour for agricultural production (Nandi, Gunn & Yukushi, 2011). Sumo (2015) observed that the number of dependants in the household influences the size of farm cultivated by the family, quantity of farm produce consumed in the house, as well as the market surplus sold in the market. The results presented in Table 9 are expected to have positive impact on agricultural production since the households with large number of dependents are likely to have access to available labour to perform agricultural activities. This would reduce the cost of hiring labour to perform agricultural activities. Ani (2004) and Nani (2005) confirmed that most of the agricultural operations are labour intensive and having a bigger household size tend to increase the available labour to perform agricultural activities.

**Farm size cultivated by beneficiaries in acres**

The farm sizes cultivated by beneficiaries in the study ranged from one to five acres (0.41ha-2.00ha). The standard deviation of 0.84 acres indicates that there was not much variation in land size cultivated by farmers in the study area (Table 10). The results showed that 48.57% of the respondents cultivated between 1 and 2 acres while far less than one-fifth

(14.85%) of the beneficiaries cultivated less than one acre. The finding contradicts Nwanze (2011); Asante (2015) and Bampoe (2015) who found the majority of farmers cultivating land sizes of less than an acre in separate studies.

**Table 10: Farm Size in Acres**

| Farm size (acres) | Frequency | Percentage |
|---|---|---|
| Less than 1.0 | 26 | 14.85 |
| 1.1-2.0 | 85 | 48.57 |
| 2.1-3.0 | 30 | 17.14 |
| 3.1-4.0 | 24 | 13.71 |
| 4.1-5.0 | 10 | 5.71 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019) n = 175, SD=0.84, Min= 0.6 acres, Max = 5acres

The finding in Table 10, also implies that farmers who participated in the study are small scale farmers. According to Ojuekaiye (2001) and Bampoe (2015), farmers who cultivate land sizes between a quarter of an acre up to fourteen acres (0.25-14) are classified as small scale farmers. Notwithstanding the size of land cultivated by the farmers in the study area, they are expected to have higher returns from the farming activities due to the input supply and extension service provided by THP.

**Primary occupation of beneficiaries**

Results presented in Table 11 show the primary occupation of the respondents in the study. It was observed that the majority (68%) were farmers, while the remaining 32% were artisans comprising; masons (26.30%), electricians (4.0%) and carpenters (1.70%). This implies that the

majority of the respondents are full-time farmers. The one-third of the respondents however, take to farming as a secondary occupation.

**Table 11: Primary Occupation of Beneficiaries**

| Occupation | Frequency | Percentage |
|---|---|---|
| Farming | 119 | 68.00 |
| Mason | 46 | 26.30 |
| Electrician | 7 | 4.00 |
| Carpenter | 3 | 1.70 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

**Farming experience of beneficiaries (years)**

The results from Table 12 indicate that the minimum and maximum number of year were 1 and 40 respectively. The majority (93.7%) of the farmers in the study area have had 11 to 40 years of farming experience. This long period of farming experience is expected to increase productivity. According to Amaza et al. (2009) farming experience is a very important variable in food production because it influences productivity, adoption of technology and scale of cultivation. The long years of farming with its associated trial and error have been found to offer farmers a wealth of knowledge and experience (Gbigbi, Bassey & Okon, 2010).

**Table 12: Farming Experience Beneficiaries (years)**

| Years | Frequency | Percentage |
|---|---|---|
| 1-10 | 11 | 6.30 |
| 11-20 | 100 | 57.10 |
| 21-30 | 59 | 33.70 |
| 31-40 | 5 | 2.90 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019) Mean = 20.59, SD = 6.18, Min =1, Max = 40

The higher number of respondents with long years of experience could be attributed to the fact that the project communities are predominantly farming communities. Therefore, there can be the likelihood of one, taking up farming as a profession early in life. The mean number of years, 20.59 years of farming experience contradicts what was reported in MoFA (2011) which stood at 11years. In addition, while the minimum years of farming experience (3.0 years) is lower than Asante (2015) and MoFA (2011), the maximum (40) years is similar to the findings of MoFA (2011).

**Years of working with THP**

It can be revealed from Table 13 that more than two out of every three (61.7%) of the beneficiaries had been on the agriculture and food security programme for more than ten years. This implies the beneficiaries should have gained enough experience to be able to improve on livelihoods. Takyiwaa (2012) indicated that "Epicentre" communities must be self-reliant after 8 years.

**Table 13: Years of Working with THP**

| Years | Frequency | Percentage |
|---|---|---|
| 1-10 | 67 | 38.30 |
| 11-20 | 108 | 61.70 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019) Mean = 12.38, SD = 3.04, Min = 8, Max = 20

**Maize Yield in Kilograms per acre of farmers before joining THP**

Table 14 shows the quantity of maize in bags produced by the respondents before joining the THP. It is observed that close to sixty percent

(59.40%) of the respondents had between one to five bags, the remaining beneficiaries had between six to ten bags before joining THP's agriculture and food security programme. The minimum (3bags/acre) and maximum (10 bags/acre) yields of maize was very low compared to the national average yield estimated by MoFA (2015). This therefore implies that beneficiaries could be prone to food insecurity and the THP's decision to select the community for the intervention was a good one.

**Table 14: Maize yield (Kg/acre) of farmers before joining THP**

| Yield (50kg bag/acre) | Frequency | Percentage |
|---|---|---|
| 1-5 | 104 | 59.40 |
| 6-10 | 71 | 40.60 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019). Mean = 5.39, SD = 1.29, Min = 3, Max =10 bags/acre

**Maize Yield in Kilograms per acre of farmers after joining THP during the 2018 season**

It can be noted from the Table 15 that 96% of all the beneficiaries have yields between 6 to15 bags of maize after joining THP. This shows an increase in productivity. This result conforms to the Theory of Change which holds that a change in knowledge, attitudes, skills, aspirations and opportunities will result in behavioural changes among the target group which in actual practice enable them to do things differently resulting in direct benefits. These direct benefits include increased income levels, improved health, more productive farming and more empowerment. Also, similar result was reported by Sumo (2015) in a study on beneficiaries who benefited from the agricultural sector rehabilitation project in Carysburg and Todee district of Liberia. Though there

had been yield increase comparing the yields before and after joining THP, the minimum (1 bag) and Maximum (20 bag) yield per acre is still low compared to the national average estimated by MoFA (2015).

**Table 15: Maize Yield (kg/acre) after joining THP during the 2018 Season**

| Yield (50kg bags) | Frequency | Percentage |
|---|---|---|
| 1-5 | 5 | 2.90 |
| 6-10 | 84 | 48.00 |
| 11-15 | 84 | 48.00 |
| 16-20 | 2 | 1.10 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019). Mean = 10.50, SD =2.46, Min = 1, Max = 20

**Source of agricultural information**

Agricultural information by farmers is considered very critical to agricultural development since it is used to make cost-effective and efficient agricultural production decisions (Iwuchuku et al., 2013). The source of agricultural information for beneficiaries involved in the study is shown in Table 16. It can be observed from the table that close to sixty percent (57.14%) of the beneficiaries derived their agricultural information from MoFA Agricultural Extension Agents. The finding contradicts Asante (2015) which reported 95.9% of MiDA beneficiaries in the Effutu Municipality used the same source for their agricultural information. It is also lower than the number of farmers found in the study by Nakano et al. (2018) to assess the impact of training on technology in Tanzania.

**Table 16: Source of Agricultural Information**

| Sources | Frequency | Percentages |
|---|---|---|
| MoFA | 100 | 57.14 |
| Trainer of Trainers (THP) | 65 | 37.14 |
| Radio | 10 | 5.70 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

**Sources of funds for agricultural production**

Results presented Table 17 depicts the sources of credit for agriculture by the beneficiaries. It is revealed that two out of every three of the respondents (61.7%) rely on personal savings while the rest depend on proceeds from the sale of produce to fund farming activities. This finding mirrors studies by Asante (2015), Musiime and Attuha (2011).

**Table 17: Sources of funds for Agricultural Production**

| Sources | Frequency | Percentages |
|---|---|---|
| Personal savings | 108 | 61.70 |
| Sale of produce | 67 | 38.30 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

The beneficiaries indicated during the data collection that, they depend on their own financial resources because they could not afford to provide collateral demanded by the financial institutions. They further revealed that the stringent conditions attached to credit from financial institutions often deter them from sourcing funding from them.

**Market outlet for farm produce**

All farmers involved in the study rely on the open market either at Anomabo or Mankessim to sell produce. Selling at the local market is the

main marketing outlet for people along the coast. Asante (2015) discovered that participants in his study which investigated the effectiveness of the MiDA commercial agricultural project, traded their farm produce in the open market. The findings of this study on market outlet for farm produce, contradicts the findings of Mutero et al. (2016) which studied the operational challenges faced by smallholder farmers in Ethewini Metropolitan South Africa. The study reported that 79% of the respondents sold their produce at the farm gate.

**Source of agricultural inputs**

Table 18 represents the source of input for respondents which are vital in promoting agricultural development and reducing rural poverty. More than half of the respondents (51.40%) depended on MoFA or THP for inputs to produce.

**Table 18: Source of Inputs**

| Sources | Frequency | Percentage |
|---|---|---|
| MoFA/THP | 90 | 51.40 |
| Retail Shop | 85 | 48.60 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

The rest 48.60 percent relied on retail shops for inputs for farming. In the case of Asante (2015), the farmers involved in the MiDA project, few beneficiaries (17%) relied on MoFA for inputs. Notwithstanding the different sources of inputs, all the respondents in the study area have access to agricultural inputs which are sometimes subsidized by THP. This was expected to improve agricultural productivity, increase profits and overall investment in agriculture.

**Source of agricultural labour**

The source of labour for agricultural production is presented in Table 19. The majority (80.6%) of the beneficiaries used family and hired labour. Very few used either hired labour only (12.0%) or family labour (7.4%). This finding agrees with the FAO's (2015) suggestion that the majority of smallholder farmers rely on both family and hired labour for agricultural production.

**Table 19: Source of Agricultural Labour**

| Sources | Frequency | Percentages |
|---|---|---|
| Family labour | 13 | 7.40 |
| Hired labour | 21 | 12.00 |
| Family and hired labour | 141 | 80.60 |
| Total | 175 | 100.00 |

Source: Field survey, Omari (2019)

**Perceived Effectiveness of Agriculture and Food Security Programme**

The components of the AFSP extended to beneficiaries include input supply, extension service and training and provision of market links and networks. The results are therefore presented and discussed according to the components of the programme.

**Perceived Effectiveness of Agricultural Input Supply**

Table 20 presents the mean analysis of the various sub-components under input supply. The composite mean was 3.25 with a standard deviation of 0.48 implying that the beneficiaries were close in their opinions and perceived the supply of inputs to be moderately effective. This result contrasts with the findings of Rusike et al. (2014) and Bampoe (2015) that farmers involved in

respective studies perceived input supply as effective. It can be observed from Table 20 that apart from credit that respondents unanimously perceived to be effective (mean =3.57; SD = 0.64), fertilizer (mean = 3.44; SD = 0.76), cutlasses (mean = 3.39; SD =0.61), seeds (mean =3.17; SD =0.80) and wellington boots (mean =3.03; SD =0.39) were perceived to be moderately effective.

**Table 20: Perceived Effectiveness of Input Supply**

| Input | Mean | SD |
|---|---|---|
| Farm credit (THP) | 3.57 | 0.64 |
| Fertilizer | 3.44 | 0.76 |
| Cutlasses | 3.39 | 0.61 |
| Seeds | 3.17 | 0.80 |
| Wellington boots | 3.02 | 0.39 |
| Agrochemicals | 2.93 | 1.10 |
| Composite | 3.25 | 0.48 |

Source: Field survey, Omari (2019), Scale: 5=Very effective, 4=Effective, 3= Moderately Effective, 2= Lowly Effective, 1=Very Low Effective

**Perceived Effectiveness of Extension Services and Training**

Beneficiaries' perception of the effectiveness of the extension and training components of the agriculture and food security programme is shown in Table 21. The analysis of the means of the components shows that beneficiaries generally perceived extension and training as "moderately effective" (mean = 3.06, SD = 0.06). This finding mirrors Bampoe (2015) which revealed that beneficiaries of the WAAPP in the Brong Ahafo Region of Ghana perceived the extension and training components as moderately effective. It can also be observed from Table 21 that though all the components under extension and training were perceived as moderately

effective, training on fertilizer application was higher than the rest (mean = 3.21; SD = 0.81). The most probable implication was that farmers realised the impact of the training in terms of yield increase.

**Table 21: Perceived Effectiveness of Extension and Training Service**

| Item | Mean | SD |
|---|---|---|
| Training fertilizer application | 3.21 | 0.81 |
| Training on row planting | 3.09 | 0.83 |
| Training on agrochemical application | 2.87 | 1.59 |
| Total | 3.06 | 0.06 |

Source: Field survey, Omari (2019), n = 175, Scale: Scale: 5=Very effective, 4=Effective, 3= Moderately Effective, 2= Lowly Effective, 1=Very Low Effective

**Perceived Effectiveness of Market Links and Networks**

Results on market links and networks component of the AFSP of THP is presented in Table 22. The areas the study considered under this component were, Linking beneficiaries to; processors, exporters, schools, restaurants and hotels. The composite mean (2.83) with standard deviation (0.42), show that beneficiaries were close in their opinion and perceived this component as "moderately effective" in improving their livelihoods. Specifically, apart from links to exporters that beneficiaries perceived to be "moderately effective" (mean = 2.49, SD = 0.95), links to schools (mean = 2.22; SD= 1.17), links to hotels (mean =2.22; SD= 1.15), links to restaurants (mean = 2.11; SD =1.23) and links to processors (mean =1.93, SD=1.22) were perceived as lowly effective by beneficiaries.

**Table 22: Perceived Effectiveness of Market Links and Networks**

| Item | Mean | SD |
|---|---|---|
| Links to exporters | 2.49 | 0.95 |
| Links to schools | 2.22 | 1.17 |
| Links to hotels | 2.22 | 1.15 |
| Links to restaurants | 2.11 | 1.23 |
| Links to processors | 1.93 | 1.22 |
| Total | 2.83 | 0.42 |

Source: Field survey, Omari (2019), Scale: 5= Very Effective, 4= Effective, 3= Moderately Effective, 2= Lowly Effective, 1=Very Lowly Effective.

**Means of Perceived Effectiveness of the Components of the Programme**

Table 23 shows the means of perceived effectiveness of the components of THP's agriculture and food security programme. From the table, the composite mean and standard deviation was (mean =3.04; SD =0.59). This implies that beneficiaries were close in their opinions and perceived the effectiveness of the components as moderate.

**Table 23: Means of Perceived Effectiveness of the Programme Components**

| Component | Mean | SD |
|---|---|---|
| Input supplied | 3.25 | 0.48 |
| Extension | 3.06 | 0.60 |
| Market links and network | 2.83 | 0.70 |
| Composite mean | 3.04 | 0.59 |

Source: Field survey, Omari (2019). Scale: 5=Very Effective, 4= Effective, 3= Moderately Effective, 2=Lowly Effective, 1= Very Low Effective.

## The Impact of the Agriculture and Food Security Programme on the Livelihood Assets of Beneficiaries

The presentation and discussion of results on the impact of the AFSP on livelihood of the beneficiaries focused on financial, physical, human and natural capital.

### Financial Capital

Table 24 presents the results on perception of beneficiaries on the impact of the agriculture and food security programme on financial capital. Beneficiaries perceived the programme to have had a 'moderate impact' on their financial capital (composite mean =2.47) and they did not vary in their opinion SD<1 (0.69).

**Table 24: Perceived Impact of Agriculture and Food Security Programme on Financial Capital of Beneficiaries**

| Financial Capitals | Mean | SD |
|---|---|---|
| Increased income level | 3.46 | 0.82 |
| Payment of children's fees | 2.88 | 0.64 |
| Reducing debt | 2.71 | 1.20 |
| Saving proceeds from sale of farm produce | 2.20 | 0.66 |
| Acquisition of money for farming | 2.20 | 0.63 |
| Receive money from other institutions | 2.15 | 0.50 |
| Receive credit from other people | 2.08 | 0.45 |
| Secure insurance for produce | 2.07 | 0.58 |
| Composite mean | 2.47 | 0.69 |

Source: Field survey, Omari (2019). Means were calculated on scale of: 5=Very Effective, 4= Effective, 3= Moderately Effective, 2=Lowly Effective, 1= Very Lowly Effective.

Beneficiaries specifically perceived an increase in income level (Mean = 3.46, SD = 0.82), ability to pay children's school fees (Mean = 2.88, SD = 0.64) and

reduction in debt levels (Mean = 2.71, SD = 1.20) as the livelihood areas the THP has moderately impacted.

**Physical capital**

The study considered physical capital in terms of ability of beneficiaries to buy a knapsack sprayer, electronic gadgets (cell phone, radio set, and laptops) and having access to vehicles to transport produce to the market for sale. Results presented in Table 25 show that beneficiaries generally perceived the programme to have moderately impacted on their physical capital (Composite mean = 2.64, SD = 1.10). This is similar to the findings of Sumo (2015) in a study on farmer's perceived impact of the agricultural rehabilitation project on their livelihood in Liberia. The standard deviation of 1.10 implied that respondents were varied in their opinions. Beneficiaries perceived the agriculture and food security programme to have had 'high impact' (mean = 3.52, SD = 0.50) on ability to buy electronic gadgets such as mobile phones and radio sets. The ability of beneficiaries to acquire radio or mobile phone is very important to agricultural production.

According Nakano et al. (2018), electronic gadgets such as mobile phones are very vital to agricultural communication as it is used by farmers to communicate with colleagues, contact extension agents and buyers of farm produce. The beneficiaries perceived the impact of the programme on ability to purchase knapsack sprayer as 'low' (Mean=2.34, SD = 1.26). Similarly, beneficiaries access to physical market around for the sale of produce was also found by the study to be 'low' (Mean =2.49, SD = 1.13).

**Table 25: Perceived Impact of Agriculture and Food Security Programme on Physical Capital of Beneficiaries**

| Physical capital | Mean | SD |
|---|---|---|
| Purchased electronic gadgets | 3.52 | 0.50 |
| Access to physical market around for the sale of my produce | 2.49 | 1.13 |
| Purchased a knapsack sprayer | 2.34 | 1.26 |
| Access to vehicles to transport produce to the market for sale | 2.22 | 1.10 |
| Composite mean | 2.64 | 1.10 |

Source: Field survey, Omari (2019), Scale: 5= Very High Impact, 4= High Impact, 3= Moderate Impact, 2= Low Impact, 1 =Very Low Impact

**Human capital**

The human capital livelihood support in the study includes; access to skilled and unskilled labour, ability to pay for labour, having access to extension service as well as being in good health. Results in Table 26 show the perceived impact of the agriculture and food security programme on the human capital of beneficiaries. The results show that beneficiaries generally perceived the impact of the agriculture and food security programme on human capital as moderate (Composite mean = 3.41, SD = 0.79) and were consistent in their opinion. Specifically, beneficiaries perceived the programme's impact on the ability to pay for labour (mean = 3.58, SD = 0.81), access to skilled labour (mean = 3.57, SD = 0.82) and access to unskilled labour (mean = 3.51, SD = 0.50) as 'high'. This may affect agricultural productivity positively because agricultural labour is very important at all levels of production. Therefore, having the ability to access and pay for labour, may enable farmers to carry out farm management activities on schedule. This may enhance productivity and improve yields of farmers.

Respondents also perceived the programme to have had a 'high' impact (mean = 3.35, SD = 0.81) on their physical fitness. This finding is also important for the programme objective since farmers need to be physically fit before they can make the most out of the various training on good agricultural practices offered by THP.

**Table 26: Perceived Impact of Agriculture and Food Security Programme on Human Capital of Beneficiaries**

| Human capital | Mean | SD |
|---|---|---|
| Helped me pay for labour | 3.58 | 0.81 |
| It has given me access to unskilled labour | 3.57 | 0.82 |
| It has helped me to be physically fit for my farming activities | 3.51 | 0.50 |
| It has given me access to skilled labour | 3.35 | 0.81 |
| It has helped me have access to extension services | 3.03 | 1.00 |
| Composite mean | 3.41 | 0.79 |

Source: Field survey, Omari (2019), Scale: 5= Very High Impact, 4= High Impact, 3= Moderate Impact, 2= Low Impact, 1 =Very Low Impact

**Social capital**

The social capital considered in the study are the ability of beneficiaries to support other family members, ability to pay school fees and being able to support friends. Results presented in Table 27 show the perception of beneficiaries of the impact of agriculture and food security programme on social capital.

Beneficiaries perceived the impact of the programme on social capitals to be 'high' (Composite mean =3.69, SD =0.44). Specifically, beneficiaries perceived the ability of programme to have helped them to pay school fees as high (Mean = 3.79, SD = 0.41) and were not too varied in their opinions. The ability of beneficiaries to pay the school fees of their wards is

positive and laudable as it shows the consciousness of beneficiaries towards the need to invest in the education of their wards.

**Table 27: Perceived Impact of the Agriculture and Food Security Programme on Social Capitals of Beneficiaries**

| Human capital | Mean | SD |
|---|---|---|
| Ability to pay school fees | 3.79 | 0.41 |
| Support to other family members | 3.49 | 0.41 |
| Support to friends | 3.49 | 0.50 |
| Composite mean | 3.67 | 0.44 |

Source: Field survey, Omari (2019), Scale: 5= Very High Impact, 4 = High Impact, 3= Moderate Impact, 2= Low Impact, 1= Very Low Impact

Equally, they perceived the impact of the programme on the ability to support other family members (Mean = 3.49, SD = 0.41) and friends (mean = 3.49, SD = 0.50) as high. This implies that beneficiaries can fulfil some of their social obligations.

**Natural Capital**

Table 28 shows the perception of beneficiaries on the impact of the agriculture and food security programme on their natural capitals. Beneficiaries generally, perceived the impact of the programme on their natural capitals as 'moderate' (Composite Mean = 3.11, SD = 0.67) and were quite consistent in their opinion. Similarly, beneficiaries perceived the impact of the programme on productivity (yield per area) as moderate. They also perceived the impact of the programme in helping them own farmland land as moderate (Mean =3.27, SD = 0.80). Equally, beneficiaries perceived the impact of the programme on access to land for agricultural production as well as better farm input as moderate.

**Table 28: Perceived Impact of the Agriculture and Food Security Programme on the Natural capital of Beneficiaries**

| Items | Mean | SD |
|---|---|---|
| Increase in productivity (yield per acre) | 3.35 | 0.81 |
| Own a farmland | 3.27 | 0.80 |
| Access to land | 3.02 | 0.67 |
| Access to better farm inputs | 2.79 | 0.41 |
| **Composite mean** | **3.11** | **0.67** |

Source: Field survey, Omari (2019), Scale: 5=Very High Impact, 4=High Impact, 3=Moderate Impact, 2= Low Impact, 1= Very Low Impact

**Perceived Impact of the Programme on Various Livelihood Capitals**

The means of the various livelihood capitals of beneficiaries are represented in Table 29. The general perception of beneficiaries on the impact of the agriculture and food security programme on their livelihood was 'moderate' (Composite Mean =2.9, SD=0.47). Bampoe (2015), made similar findings in a study on cassava farmers who benefited from the West Africa Agricultural Productivity Programme in the Brong Ahafo Region of Ghana. It however, contradicts the findings of Abikoye et al., (2015) which revealed that beneficiary farmers of the Fadama III project in Kwara State, Nigeria, perceived the impact on their livelihood as 'high'.

**Table 29: Means and Standard Deviation of Perceived Impact of the Programme on various Livelihood Capitals**

| Livelihood capital | Mean | SD |
|---|---|---|
| Social | 3.69 | 0.39 |
| Human | 3.41 | 0.67 |
| Natural | 3.11 | 0.59 |
| Physical | 2.64 | 0.85 |
| Financial | 2.47 | 0.50 |
| Composite | 2.95 | 0.47 |

Source: Field survey, Omari (2019), Scale: 5=Very High Impact, 4= High Impact, 3=Moderate Impact, 2= Low Impact, 1= Very Low Impact

**Relationship between Socio-Economic and Demographic Characteristics on Perceived Effectiveness of the Agriculture and Food Security Programme**

The relationship between socio-economic and demographic characteristics and perceived effectiveness of the programme on the livelihoods of beneficiaries was analysed using Pearson's Moment Correlation Co-efficient. The results presented in Table 30 indicate that, there was low, negative and significant relationship between farm size (r = -0.17, p = 0.02*), yield before joining THP (r= - 0.24**, p = 0.00), sex of beneficiaries (r = -0.09, p = 0.02), farming experience (r = -0.08, p = 0.031) and perceived effectiveness at alpha level of 0.05. The results imply that perceived effectiveness of the programme increases with decreasing farm size, decreasing yield before joining THP, decreasing farming experience and decreasing number of female beneficiaries. In other words, male beneficiaries with less farming experience, low yields before joining THP and small farm sizes, perceived the programme to be more effective compared to their female counterparts.

**Table 30: Relationship between Socio-economic and Demographic Characteristics and Perceived Effectiveness of the AFSP on Livelihoods**

| | Y= Perceived effectiveness | |
|---|---|---|
| Independent variables | r | p-value |
| $X_1$ Age | -0.10 | 0.182 |
| $X_2$ Farming experience | -0.08 | 0.031 |
| $X_3$ Dependants | 0.11 | 0.145 |
| $X_4$ Farm size | -0.17 | 0.002 |
| $X_5$ Years with THP | -0.04 | 0.057 |
| $X_6$ Yield before joining THP | -0.09 | 0.002* |
| $X_7$ Yield after joining THP | -0.02 | 0.075 |
| $X_8$ Educational level | 0.37** | 0.00 |
| $X_9$ Sex (dummy) | -0.24** | 0.00* |

Source: Field survey, Omari (2019) *p< 0.05, n = 175

On the contrary, there was a moderate, positive and significant relationship between educational level of beneficiaries (r = 0.37**, p = 0.00) and perceived effectiveness of the AFSP on livelihoods. This means perceived effectiveness of the programme on livelihoods increased with increasing level of education. This also implies that beneficiaries with some form of education, perceived the AFSP to be effective than beneficiaries with no education.

**Testing of Hypothesis 1**

The results shown in Table 30 revealed a statistically significant (0.000) difference existed between sex of beneficiaries and perceived effectiveness of the AFSP on their livelihoods at alpha level of 0.05. Therefore, the null hypothesis of the study which stated that there was no significant relationship between sex of beneficiaries and perceived effectiveness of the AFSP on livelihoods was rejected.

**Multiple stepwise regression for selected socio- economic and demographic characteristics and perceived effectiveness of the programme components**

The results in Table 31, represent the stepwise multiple regression of socio-economic and demographic characteristics and the perceived effectiveness of the programme on livelihood.

**Table 31: Multiple Stepwise Regression of Selected Socio-economic and Demographic Characteristics and Perceived Effectiveness of the Programme Components**

| Predictor | Step of entry | Beta | $R^2$ | Adjusted $R^2$ | $R^2$ Change | SEEE | F.Change | P-value |
|---|---|---|---|---|---|---|---|---|
| $X_8$ Educational level | 1 | 0.241 | 0.079 | 0.073 | 0.079 | 0.39980 | 14.756 | 0.001 |
| $X_9$ Sex | 2 | 0.189 | 0.113 | 0.102 | 0.034 | 0.39347 | 6.606 | 0.011 |

Source, Field survey, Omari (2019) p – Value < 0.05, n= 175

The results show that the two socio-economic and demographic variables of the beneficiaries contributed a total of 10.2 percent of the variance in perceived effectiveness (as indicated in the last row of the adjusted $R^2$ in Table 31). The educational level of beneficiaries accounted for 7.3 percent of the variance in the perceived effectiveness of the AFSP on livelihood while sex of beneficiary contributed the remaining 2.9 percent. Between the two variables, the best predictor of perceived effectiveness was educational level.

This finding is similar to Sawant et al. (2003), which found educational level as the best predictor of perceived effectiveness in a study on farmers' level of education and perceived effectiveness of extension system of the Maha region in India. Educational level being the best predictor of

effectiveness in the study area can be attributed to the fact that a greater number (92%) of the beneficiaries have some level of education and are likely to implement innovative ways of farming. According to Anyanwu et al. (2012), farmers who are educated are likely to be less conservative in applying innovations which are likely to improve production and livelihood. It however contradicts More (2014), which found no relationship between perceived effectiveness and educational level.

**Relationship between Socio-Economic and Demographic Characteristics and Perceived Impact AFSP on Livelihood**

Table 32 presents the relationship between selected socio-economic and demographic characteristics of beneficiaries and perceived impact of the AFSP on their livelihood. The results in Table 32 showed that there was negative, negligible relationship between beneficiaries' age (r = -0.10, p = 0.18), farming experience (r = - 0.08, p = 0.66**), farm size (r = -0.04, p = 0.57), yield before joining THP (r = -0.02, p = 0.75) and perceived impact of the AFSP on their livelihood. This implies there was an inverse relationship between age, farming experience, farm size and yield before joining THP and perceived impact of AFSP on livelihood. In other words, young farmers with less farming experience and low yield before joining THP perceived the AFSP to have had impact on their livelihood. There was however a positive, negligible linear relationship between years of working with THP (r = 0, 09, p = 0.22), yield after joining THP (r = 0.02, p = 0.75) and perceived impact of the AFSP. This implies number years of joining THP and yield after joining THP had a direct relationship with perceived impact of the programme.

**Table 32: Relationship between Socio-economic and Demographic Characteristics and Perceived Impact of the AFSP on Livelihoods.**

| Y= Perceived impact | | |
|---|---|---|
| Independent variables | R | p-value |
| $X_1$ Age | -0.10 | 0.18 |
| $X_2$ Farming experience | -0.08 | 0.66** |
| $X_3$ Dependents | -0.17 | -0.02 |
| $X_4$ Farm size | -0.04 | 0.57 |
| $X_5$ Years with THP | -0.09 | 0.22 |
| $X_6$ Yield before joining THP | -0.02 | 0.075 |
| $X_7$ Yield after joining THP | 0.02 | 0.075 |
| $X_8$ Educational level | 0.37** | 0.00 |
| $X_9$ Sex (dummy) | -0.24** | 0.00* |

*p<0.05, n= 175, Source: Field survey, Omari, (2019)

There was however a moderate, positive and significant relationship between perceived impact and educational level of beneficiaries (r=0.37**, p = 0.00) at alpha level of 0.05. This implies that beneficiaries with some level of education perceived the programme to have had impact on their livelihoods. On the contrary, there was a low, negative and significant relationship between sex of beneficiaries and perceived impact of the programme on livelihood. This implies that perceived impact of the programme decreases as the number of females on the programme increases.

**Testing of Hypothesis Two**

The hypothesis two of the study which sought to test whether there was a significant difference between the yields of beneficiaries before and after joining THP was tested using Paired Sample T-Test. The results in appendix D revealed a statistically significant (0.000) difference existed between yields of

beneficiaries before and after joining THP at alpha level of 0.05. Therefore, the null hypothesis of the study which stated that there was a significant difference between yields of beneficiaries before and after joining THP was accepted.

**Multiple stepwise regression of selected socio-economic and demographic characteristics and perceived impact of the programme**

Stepwise regression results of selected socio-economic and demographic characteristics of beneficiaries and perceived impact of the AFSP on livelihood are presented on Table 33. The results show that the composite adjusted R-squared values for sex and educational level of beneficiaries was 0.113. This implies that 11.3 percent of the variation in perceived impact of the ASFP in the Mfantsiman municipality is explained by sex (7.8 percent) and level of education (3.5 percent). Sex of beneficiaries was the best predictor of perceived impact between the two variables. The most probable explanation is that since the majority of beneficiaries have some form of formal education, they might have adopted innovative ways of farming which had helped improve their productivity thus may perceive the programme as having impact on their livelihoods (Anyanwu et al., 2012). The beta value for the educational level indicates that a 100 percent unit increase in the perceived impact of the programme will lead to 20.5 percent increase in level of education. Similarly, a 25 percent increase in the number of males will lead to 100 percent unit increase in perceived impact. This implies the male beneficiaries perceived the AFSP to have had impact on their livelihood than the female counterparts

**Table 33: Multiple Stepwise Regression of Selected Socio-economic and Demographic Characteristics and Perceived Impact of the Programme**

| Predictor | Step of entry | Beta | $R^2$ | Adjusted $R^2$ | $R^2$ Change | SEE | F. Change | P-value |
|---|---|---|---|---|---|---|---|---|
| Sex ($X_9$) | 1 | 0.246 | 0.083 | 0.078 | 0.083 | 1.17089 | 15.699 | 0.001 |
| Educational level ($X_8$) | 2 | 0.205 | 0.123 | 0.113 | 0.040 | 1.14831 | 7.871 | 0.006 |

Source : Field survey, Omari, (2019) p – Value < 0.05, n= 175

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the key findings according to the objectives of the study. The conclusions and recommendations to improve the impact of the AFSP of THP and others based on the experience of the study in Ghana are presented in this chapter. The chapter ends with suggestions for further studies.

## Summary

Food security has become a major concern globally with sub-Saharan Africa and some parts of Asia being the most affected areas. Ghana believes to have made strides in ensuring food security but this has not trickled down to most communities and households. Ghanaians are said to be either food insecure, vulnerable and or becoming food insecure. These situations have prompted state and non-state actors to implement policies and interventions to address food insecurity. The national and local level interventions have been implemented with varying degree of success. While studies reveal that some were successful, others are said to have had less significant impact in improving the livelihood of beneficiaries. The variables responsible for the success or otherwise of these policies and programmes have been documented by various authors such as (Adu et. al., 2018; Kuwornu et. al., 2013 & FAO, 2017)

The Hunger Project Ghana is one of the non-state organisations, at the forefront in the fight against food insecurity in rural communities in the Mfantsiman Municipality of the Central Region of Ghana. The Hunger Project provides farmers with inputs such as seeds, fertilizers, cutlasses, farm credit,

wellington boots as well as agrochemicals through the deployment of its agricultural and food security interventions. They also assist farmers with extension services and training on good agricultural practices. To ensure that farmers are able to sell their produce after harvesting, THP also provides market links and network farmers to potential buyers of farm produce of the beneficiaries. The programme has therefore received widespread acceptance by beneficiaries in the beneficiary communities under the Taido Epicentre.

This study sought to investigate the components of the agriculture and food security programme of THP's work at Taido Epicentre. The core objective of the study was to assess beneficiaries' perception of the impact of the project on their livelihood. The study sought to specifically, describe the socio-economic and demographic characteristics of the beneficiaries of the programme; examine the perceived impact of the programme on the livelihood of the beneficiaries and; to determine the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived effectiveness of the programme on livelihood. The study also sought to examine the extent to which socio-economic and demographic characteristics of beneficiaries influence the perceived impact of the programme on livelihood.

The study employed survey design and used multi-stage sampling technique to select 175 participants from a population of 320 who were beneficiaries of the THP project. Percentages, means, standard deviation, correlation, linear and multiple regressions were used in analysing the data using SPSS version 25.

**Summary of Key Findings of the Study**

Key findings of the study based on the objectives of this study are presented as follows:

The majority of the beneficiaries of the agriculture and food security programme of THP to be males whiles the rest were females. The beneficiaries in the study area have either BECE or MLSC as the highest educational qualification.

All beneficiaries were small scale farmers, cultivating between 0.25 to 14 acres and had varied (16-20) years of farming experience. They were married adults with more than half of them having household sizes of one to five. Farming was found to be the primary occupation of majority of the beneficiaries with the remaining engaged in artisanal venture such as masonry, carpentry and electrical works as their primary occupation.

Most of the beneficiaries depended on family and hired labour to perform agricultural activities. Beneficiaries recorded an increase in maize yield after joining THP's agriculture and food security programme. Majority however, recorded yield increase between 6-15 bags in maize production after joining benefiting from the intervention. Regarding the source of agricultural information, majority of the beneficiaries depended on MOFA and THP's project ToTs for agricultural information. While the rest relied on radio for agricultural information. The study also revealed that close to sixty-two percent of beneficiaries depended on personal savings for farming whiles the remaining beneficiaries funded farming with proceeds from the sale of farm produce. In terms of marketing of farm produce and source of agricultural inputs, the study revealed that beneficiaries use the open markets in either

Anomabo or Mankessim for the sale of farm produce. In the same vein, almost half of the beneficiaries relied on retail agrochemical shops in these two towns for their inputs while the rest depended on Agricultural Extension Agents of MoFA for their inputs.

Findings on the perception of beneficiaries on the effectiveness of the components of the agriculture and food security programme on their livelihoods, revealed that beneficiaries perceived the effectiveness of the programme component as 'moderately effective' (composite mean = 3.04, SD = 0.59). The perceived impact of the programme was generally moderate. The beneficiaries however perceived the impact of the programme on their social capital to be 'high' compared to the other livelihood capitals.

There was significant and negative relationship between perceived effectiveness of the AFSP and sex and farm size. Educational level and sex of beneficiaries explained 10.2% of the variance in the perceived effectiveness of the AFSP on livelihood with educational level contributing 7.3%. The study also revealed that male beneficiaries who had small farms and low years of farming experience, before joining THP's AFSP perceived it as effective. Additionally, there was also an inverse relationship between age of beneficiaries, farming experience, farm size, yield before joining THP and perceived impact of the AFSP on livelihood.

Finally, a multiple stepwise regression analysis of the socio-economic and demographic characteristics of the beneficiaries and perceived impact, revealed that sex and educational level explained 11.3% of the variance in the perceived impact of the AFSP on livelihood. Sex of beneficiaries contributed

7.8% of the variance in the perceived impact with educational level contributing the remaining 3.5%.

**Conclusions**

The following conclusions were drawn base on the summary of the key findings of the study;

1. More males, with basic education as highest level of educational qualification, between the ages of 21 to 60 and above, participated in the programme.
2. Beneficiaries were adult married farmers, with varied years of farming experience, working on small farm size using family and hired labour on their farms.
3. Beneficiary's yields have improved since joining The Hunger Project. Also, farmers sell farm produce and depend on agrochemicals from the open market. They also access agricultural information from MoFA and project ToTs.
4. Beneficiaries perceived the components of the project as moderately effective.
5. Beneficiaries perceived the project as having moderate impact on livelihood capitals. However, perceived impact of the programme on social capital was found to be high.
6. There was a moderate significant relationship between educational level of beneficiaries and perceived effectiveness of the AFSP on livelihoods. However, there was low, negative significant relationship between sex of beneficiaries and perceived effectiveness of AFSP on

livelihoods. The two variables accounted 10.2% in the variance of perceived effectiveness.

7. Young beneficiaries with less farming experience and low yield before joining the AFSP perceived the programme to have had impact on livelihood.
8. Beneficiaries with some level of education perceived the impact of the AFSP as positive on their livelihood.

**Recommendations**

The following recommendations were made based on conclusions of the study. The study recommends that:

1. THP should encourage more females by introducing training regimes that are more female friendly in the study area. This will help bridge the disparities between the number of men and women involved in programme.
2. Beneficiaries should be encouraged by staff of Department of Agriculture at the Mfantsiman Municipality to engage spouses and other dependants in the households in the programmes. The young ones among the dependants may acquire farming knowledge and skills which may influence them to go into farming in the future. Apart from serving as means of apprenticeship it will ensure sustainability, while a greater percentage of the labour requirements for farming activities could be obtained the households and reduce high hired labour costs.
3. THP should improve the farm credit component of the AFSP in order to provide farmers with the needed financial support for farming activities. Beneficiaries could explore other sources such as rural banks

and credit unions in the Municipality. THP can use its bargaining power to enable acquire equipment and other supplies as credit to help increase productivity,

4. THP must liaise with state institutions like Ghana Buffer Stock Company and aggregators operating under the planting for food and jobs to help beneficiaries market produce after harvesting. THP should encourage beneficiaries to make use of their food bank storage facility to prevent post-harvest loses and also help beneficiaries to attract good prices for their produce during the lean season.
5. Beneficiaries should be encouraged to process some produce to add value to produce and prevent postharvest losses. Apart from MoFA and project TOTs, beneficiaries should also source agricultural information from other media such as radio and TV programmes, friends and family members who are more experienced to enhance their knowledge base and also be in tuned with current agricultural technologies.
6. THP should liaise with MoFA to link the beneficiaries to benefit from some of the subsidized agricultural inputs to help reduce high cost of buying inputs from retail outlets
7. THP must improve its collaboration with MoFA to ensure that more project TOTs are trained and resourced for effective extension service delivery in the project communities.
8. THP should collaborate with other NGOs who have specialised in helping farmers to find market for their produce in order to improve the market link and access component of the programme.

9. THP and other development organizations, should devote attention to improving the financial capital of farmers by introducing alternative source of income aside farming. This will eventually impact positively on all the other livelihood capitals.
10. THP and other development organizations in the Mfanstiman Municipality should pay attention to sex and educational level in order to improve the perceived effectiveness and impact of their programmes on beneficiaries.
11. THP should encourage more young people with less farming experience to join the AFSP in other to improve the impact of the programme on livelihoods.
12. THP and other development organizations offering agricultural interventions in the Mfanstiman municipality should encourage more people with some level of education to join in order to increase their involvement in agricultural production and improve livelihoods.

**Suggestions for Further Research**

1. The study should be replicated in other communities under the Taido epicenter using the "with" and "without" method to help validate the findings of this study.
2. The study should also be carried out in the Asafra epicenter so as to compare and ascertain the full impact and effectiveness of the AFSP in the Central Region.

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# APPENDICES

## APPENDIX A: STRUCTURED INTERVIEW SCHEDULE

Dear Respondents,

The Hunger Project introduced the agriculture and food security programme in your district to improve on the livelihood beneficiaries which you were one of them. This instrument has been designed to assess the perceived impact of the agriculture and food security programme of The Hunger Project on the livelihood of the beneficiaries in the Mfantsiman Municipality of the Central Region of Ghana. The results would be used to improve the programme.

You are therefore entreated to respond to the questions by expressing your candid opinions and suggest where possible ways to improve the programme. The information you provide would be treated confidential and would be used for the purpose of the research. Recommendations from the study will be shared with The Hunger Project and other stakeholders to improve the programme.

Thank you

Mr. Richard Omari — Research Student

Prof. Festus Annor-Frempong — Supervisor

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## PART A

Perceived effectiveness of the component of THP's Agriculture and Food Security Programme.

Please indicate the extent to which the following components of the agriculture and food security programme have been either effective or ineffective in helping you to achieve your farming objective. Please tick [√] one of the boxes by the following guide;

5- Very effective [VE] = means on the scale of 5 out of 5, I can say that it has been effective in helping me achieve my farming objectives

4- Effective [E] = means on the scale of 4 out of 5, I can say that it has been effective in helping me achieve my farming objectives

3- Moderately effective [ME] = means on the scale of 3 out of 5, I can say that it has been effective in helping me achieve my farming objectives.

2. Lowly effective [LE] = means on the scale of 2 out of 5, I can say that it has been effective in helping me achieve my farming objectives.

1. Very lowly effective [VLE] = means on the scale of 1 out of 5, I can say that it has been effective in helping me achieve my farming objectives.

0- Cannot tell [CNT] =I cannot tell the extent of effectiveness of the components of the programme in helping me achieve my farming objectives.

| Programme Component | Extent of ineffectiveness | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 |
| A. Input Supply | | | | | | |
| Seeds supplied | | | | | | |
| Fertilizer supplied | | | | | | |
| Cutlasses supplied | | | | | | |
| Farm credit provided | | | | | | |
| Wellington boots provided | | | | | | |
| Agro-chemicals supplied | | | | | | |
| B. Extension service and Training | | | | | | |
| Training on row planting | | | | | | |
| Training on proper methods of fertilizer application | | | | | | |
| Training on agro-chemical application | | | | | | |
| C. Market Links and Networks | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Links to processors | | | | | | |
| Links to exporters | | | | | | |
| Links to schools | | | | | | |
| Links to restaurants | | | | | | |
| Links to hotels | | | | | | |

**PART B**

Perceived Impact of THP-Ghana's Agriculture and Food Security Programme on Beneficiary's Livelihood.

Please indicate extent to which the various aspects of life have been impacted by the agriculture and food security programme by ticking [√] one of the boxes. Please the following as a guide;

5. Very high impact [VHI] = means on the scale of out 5 of 5, I can say that it has made a very high impact on the various aspects of my life.

4- High impact [HI] = means on the scale of out 4 of 5, I can say that it has made a high impact on the various aspects of my life.

3- Moderate impact [MI] = means on the scale of 3 out of 5, I can say that it has made a moderate impact on the various aspects of my life.

2- Low impact [LI] = means on the scale of 2 out of 5, I can say that it has made a low impact on the various aspects of my life.

1- Very low impact [VLI] = means on the scale of 1 out of 5, I can say that it has made a very low impact on the various aspects of my life.

0-Cannot tell [CNT] = I cannot tell if the impact of the programme on my livelihood

| Livelihood Capitals | Ratings | | | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | |
| A. Financial Capital | | | | | | | |
| It has helped me receive credit from other people | | | | | | | |
| It has helped me acquire credit from other institutions | | | | | | | |
| It has helped me save the proceeds from the sale of my farm produce. | | | | | | | |
| It has helped me secure insurance | | | | | | | |
| It has helped me pay my children's school fees | | | | | | | |
| It has helped me acquire money for farming. | | | | | | | |
| It has increased my income level | | | | | | | |
| It has helped me decrease my debt | | | | | | | |
| B. Physical Capitals | | | | | | | |
| It has helped buy a knapsack sprayer | | | | | | | |
| It has helped buy electronic gadgets(cell, phone, radio, laptops) | | | | | | | |
| It has helped me to have access to vehicles to transport my produce to the market for sale | | | | | | | |
| It has helped me have physical market around for the sale of my produce. | | | | | | | |
| C. Human Capital | | | | | | | |
| It has given me access to skilled labour. | | | | | | | |
| It has given access to unskilled labour. | | | | | | | |
| It has helped me pay for labour | | | | | | | |
| It has helped me have access to extension service | | | | | | | |
| It has helped me to be physically fit for my farming activities | | | | | | | |
| D. Social Capital | | | | | | | |
| Support to other family members | | | | | | | |
| Support friends | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ability to pay school fees | | | | | | | |
| E. Natural Capitals | | | | | | | |
| Increase in productivity (yield per acre/ha) | | | | | | | |
| Access to land | | | | | | | |
| Own a farm land | | | | | | | |
| Access to better farm inputs | | | | | | | |

**PART C**

Socio-economic and Demographic Characteristics of Beneficiaries

1. Name of community……

2. Sex Male [ ] Female [ ] please tick [√]

3. Please indicate your age (in years)……

4. Marital status. Please tick [√]

a. single [ ] b. married [ ] c. separated [ ] d. divorced [ ] e. widowed [ ]

5. Kindly indicate your highest educational qualification. Please tick [√]

a. No formal education [ ] b. Primary Education [ ] c. B.E.C.E [ ]

d. MSLC [ ] e. SSCE/WASSCE [ ] f. GCE "O" Level [ ]

g. GCE "A" Level [ ] h. Tertiary [ ] Others (specify) ……..

6. Household size of respondent …….....

7. Please how many years have you been with THP-Ghana.....

8. How many years have you been into farming? …….....

9. What type of crop do you grow? …….

10. What is the size of your farm in acres?

| Type of Crop | Size of Farm |
|---|---|
| Maize | |
| Cassava | |
| Citrus | |
| Oil palm | |
| Pepper | |
| Garden eggs | |

11. Please indicate your yield (Kg/acre) before and after joining the THP.

| Type of Crop | Yield before THP | Yield after THP |
|---|---|---|
| Maize | | |
| Cassava | | |
| Citrus | | |
| Oilpalm | | |
| Pepper | | |
| Garden eggs | | |

12. What is your primary occupation? .....

13. Where do get agricultural information? Please tick [√]

a. MoFA [ ] b. THP- officials [ ] c. Friend [ ]

d. Radio stations [ ] e. Inputs dealers

14. What are the sources of your funds for your farming activities?

Please tick [√] a. Commercial banks [ ] b. Rural Banks [ ]

c. Micro Finance [ ] d. Sale of assets [ ] e. Sale of farm produce [ ]

f. Personal savings [ ] g. Money lenders [ ] h. Family Members [ ]

j. Friends [ ] others specify.....

15. Where do you sell your produce? Please tick [√]

a. Through middle men/women [ ] b. Local market [ ]

c. Through NGOs [ ] d. Processor [ ] e. Others specify.....

16. Where do you get your inputs for your farming?

a. From AEAs [ ] b. Wholesale shops [ ] c. THP [ ] d. I can't tell [ ] e. Other NGOs [ ]

Others specify.....

17. Do you use any technology in your farming?

Yes [ ] No [ ]. Please tick [ ]

18. If yes, please indicate the kind of technology you use in the following farming activities;

Land preparation……..

Weed control……

Fertilizer application……

Harvesting……

19. What are the sources of labour for your farming activities?

a. Family labour [ ] b. hired labour [ ] c. family and hired labour

20. Do you belong to any Farmer Base Organization (FBO)?

Yes [ ] No [ ]. Please tick [ ]

21 If yes what is the name of the FBO……location…… and your position…

**THANK YOU**

## APPENDIX B: TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

| *N* | *S* | *N* | *S* | *N* | *S* |
|---|---|---|---|---|---|
| 10 | 10 | 220 | 140 | 1200 | 291 |
| 15 | 14 | 230 | 144 | 1300 | 297 |
| 20 | 19 | 240 | 148 | 1400 | 302 |
| 25 | 24 | 250 | 152 | 1500 | 306 |
| 30 | 28 | 260 | 155 | 1600 | 310 |
| 35 | 32 | 270 | 159 | 1700 | 313 |
| 40 | 36 | 280 | 162 | 1800 | 317 |
| 45 | 40 | 290 | 165 | 1900 | 320 |
| 50 | 44 | 300 | 169 | 2000 | 322 |
| 55 | 48 | 320 | 175 | 2200 | 327 |
| 60 | 52 | 340 | 181 | 2400 | 331 |
| 65 | 56 | 360 | 186 | 2600 | 335 |
| 70 | 59 | 380 | 191 | 2800 | 338 |
| 75 | 63 | 400 | 196 | 3000 | 341 |
| 80 | 66 | 420 | 201 | 3500 | 346 |
| 85 | 70 | 440 | 205 | 4000 | 351 |
| 90 | 73 | 460 | 210 | 4500 | 354 |
| 95 | 76 | 480 | 214 | 5000 | 357 |
| 100 | 80 | 500 | 217 | 6000 | 361 |
| 110 | 86 | 550 | 226 | 7000 | 364 |
| 120 | 92 | 600 | 234 | 8000 | 367 |
| 130 | 97 | 650 | 242 | 9000 | 368 |
| 140 | 103 | 700 | 248 | 10000 | 370 |
| 150 | 108 | 750 | 254 | 15000 | 375 |
| 160 | 113 | 800 | 260 | 20000 | 377 |
| 170 | 118 | 850 | 265 | 30000 | 379 |
| 180 | 123 | 900 | 269 | 40000 | 380 |
| 190 | 127 | 950 | 274 | 50000 | 381 |
| 200 | 132 | 1000 | 278 | 75000 | 382 |
| 210 | 136 | 1100 | 285 | 1000000 | 384 |

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

## APPENDIX C: DAVIS CONVERSION FOR DESCRIBING MAGNITUDE OF CORRELATION COEFFICIENTS

| Magnitude of Correlation Coefficient Determination (r) | | |
|---|---|---|
| 1 | 1.0 | Perfect |
| 2 | 0.70 – 0.99 | Very High |
| 3 | 0.50 – 0.69 | Substantial |
| 4 | 0.30 – 0.49 | Moderate |
| 5 | 0.10 – 0.29 | Low |
| 6 | 0.01- 0.09 | Negligible |

# APPENDIX D: PAIRED SAMPLE T-TEST FOR YIELD BEFORE AND AFTER JOINING THP

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Yield_Before_THP | 1.4057 | 175 | .49244 | .03722 |
| | Yield_After_Joining_THP | 2.4743 | 175 | .57553 | .04351 |

**Paired Samples Correlations**

| | | N | Correlation | Sig. |
|---|---|---|---|---|
| Pair 1 | Yield_Before_THP & Yield_After_Joining_THP | 175 | .372 | .000 |

**Paired Samples Test**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | Yield_Before_THP – Yield_After_Joining_THP | -1.06857 | .60257 | .04555 | -1.15847 | -.97867 | -23.459 | 174 | .000 |