

**WOMEN'S CONTRIBUTION TO LOCAL ECONOMIC DEVELOPMENT: A
STUDY OF WOMEN IN CASSAVA PRODUCTION AND PROCESSING IN
CENTRAL TONGU DISTRICT.**

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By

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DEDICATION

This research work is dedicated to my youngest son, Victory Dzada-Mensah who was born few days to the completion of the of programme study.

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ABSTRACT

The study examined women's contribution to local economic development (LED) via cassava production and processing in Central Tongu District of the Volta Region of Ghana. Survey research methodology using questionnaires and guided interviews were used in collecting data required for the study. Proportional stratified probability sampling with simple random sampling technique was used to select 171 respondents out of 296 in the sampling frame. The objectives of the study were to examine the effects of women's socio-economic factors on cassava production and processing, assess activities performed by the women, ascertain their sources of support, assess profitability of cassava production and processing as economic activities and examine problems women faced in cassava production and processing in the study area. Data collected were analysed using descriptive and inferential statistics. The coefficient of determination (R^2) was only 0.063 indicating the model used had low goodness of fit. Out of six socio-economic factors analysed, only educational level and family size had significant effects on cassava production and processing in the district. The analysis revealed also that cassava production and processing were profitable economic activities in the district. In addition, the results showed that 65 percent of the women were married, 79 percent completed formal education and 29 percent performed farm activities such as land preparation and 45 percent the post farm activities such as processing and products marketing. The majority (64%) of the respondents depended on ploughed back profit for their cassava businesses. The results revealed again that only 37 percent of the women received cassava varieties and 75 percent of them did not have access to extension services delivery. Finally, the results showed that 17 percent and 11 percent of the women hired labour services at the farm and post farm levels of their activities respectively.

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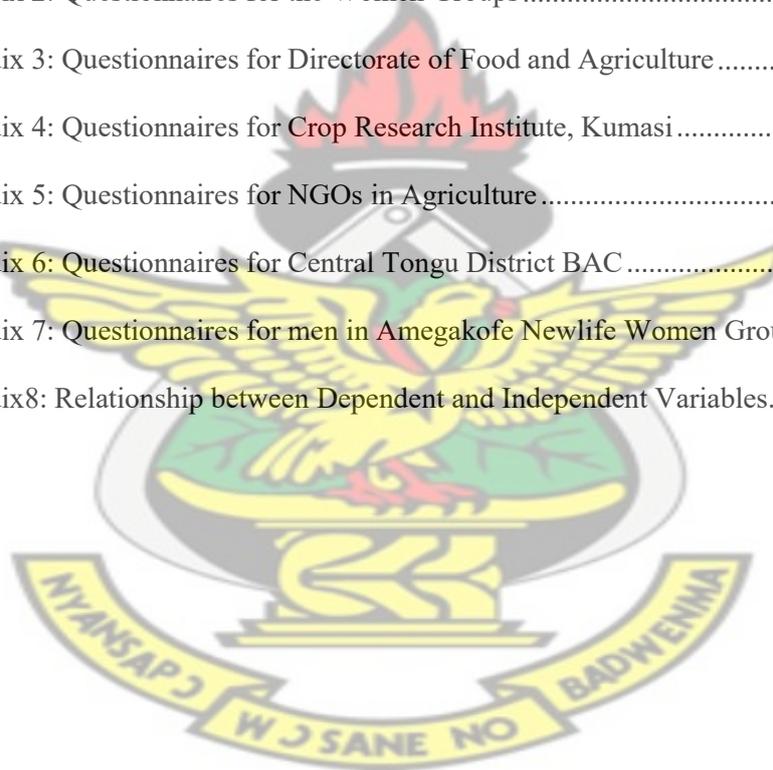
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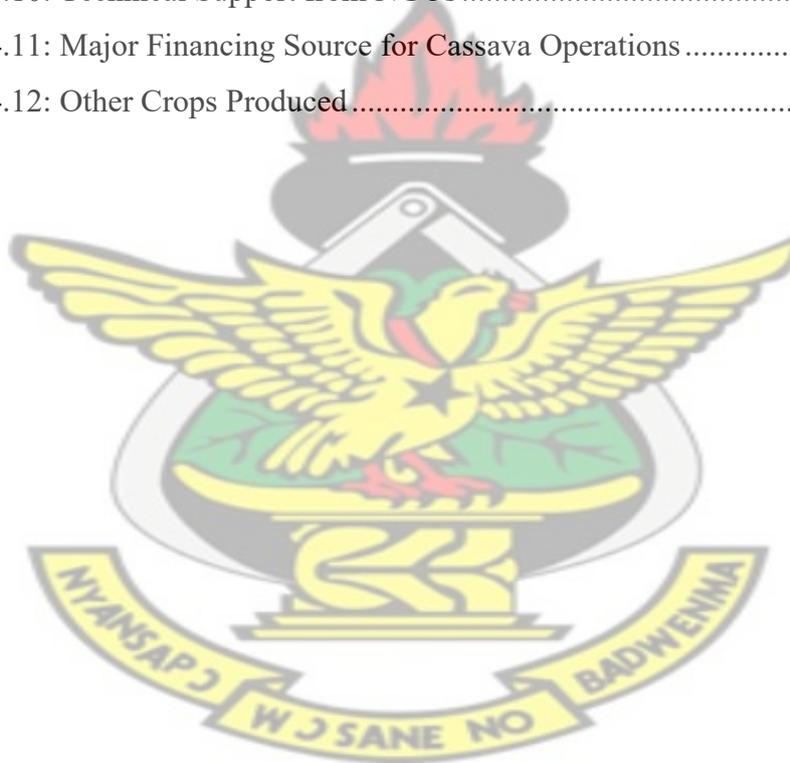
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LIST OF ACRONYMS

BDS	Business Development Services
CAVA	Cassava Adding Value for Africa
CBB	Cassava Bacteria Blight
CMD	Cassava Mosaic Disease
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GSM	Green Spider Mite
GLSS	Ghana Living Standards Survey
GSS	Ghana Statistical Services
HDI	Human Development Index
IFAD	International Fund for Agricultural Development
IITA	International Institute for Tropical Agriculture
ILO	International Labour Organization
LED	Local Economic Development
MMDAs	Metropolitan Municipal and District Assemblies
MoFA	Ministry of Food and Agriculture
NDPC	National Development Planning Commission
NEPAD	New Partnership for Africa's Development
PROYCOD	Progressive Youth and Community Development
RCC	Regional Coordinating Council
RCPMI	Regional Cassava Processing and Marketing Initiative
RTIMP	Roots and Tuber Improvement Marketing
UNCTAD	United Council on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
WCA	West and Central Africa

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the Study

Women have been instrumental in the socio-economic development of society (Mammen and Paxson, 2000). Premised on this, Adams and Kruppenbach (1987) maintain that there can be no societal transformation without the involvement, support, and leadership of women. Women in Ghana play a major role in the agricultural sector which employed 50 percent of the population in 2009 (FAO, 2012) and 45.8 percent in 2010 (Ghana Statistical Service, 2012). The agricultural sector is the main contributor to Ghana's Gross Domestic Product (GDP), accounting for 34.4 percent in 2009, compared to 26.1 and 30.5 percent for the industrial sector and services respectively (FAO, 2012).

Local Economic Development has a primary purpose of encouraging local initiatives to improve upon livelihoods in local communities. Any successful Local Economic Development (LED) strategy takes into account the needs, priorities and opinions of both women and men, ensuring that both benefit equally from social change and economic growth, and that gender inequalities are eliminated (ILO, 2010). Ensuring LED in Ghanaian local governance system calls for the creation of equal opportunities for both men and women to discover their full potential to enhance living conditions of people in the local communities. ILO (2010) suggests that obtaining the full participation of women in LED process will require overcoming deeply entrenched discriminatory attitudes and challenging the existing power structures. The

organization further prescribes that national policy should provide an enabling environment for gender mainstreaming, and must be accompanied by targeted interventions at the local level; and if carried out consistently over a certain period of time, generally will yield perceptible results.

According to ILO (2010), LED strategy aims at creating decent work opportunities but in societies where women's participation in public affairs is severely restricted by tradition, economic disadvantage and lower education, this is easier said than done. Where women enjoy relatively equal access to decision-making structures and resources, LED approach strengthens their participation in the private sector, paying greater attention to their needs in terms of business development services (BDS), access to financial resources, association-building, knowledge about rights, rules and regulations (ILO,2010).

It is believed over the years that some crops are designated as 'women's for planting and processing and these include vegetables, groundnuts and cassava while yam and tree crops such as cocoa and palm produce are said to be men's as cited by Ajayi (1995) in Ogunleye et al., (2008). The cultivation and on-farm processing of cassava create rural employment particularly for women in Asia, Latin America and Sub-Saharan Africa (Sarman and Kunchai, 1991). From this background, African leaders through NEPAD proposed to IFAD to give priority to cassava in its regional agricultural development strategies. The result was the launching of IFAD's Regional Cassava Processing and Marketing Initiative" (RCPMI) in West and Central Africa (WCA) in 2007. IFAD has a goal of enabling the rural people to improve and diversify their livelihoods in a sustainable manner.

Cassava has taken the place of maize as Africa's most important food crop due to the unpredictable rainfall, associated with the latter (Scott et al., (2000). The crop has the capacity to yield under marginal soil condition and can therefore play a key role in the global food security. The crop has long been identified as one of the commodity approaches to poverty reduction (FAO, 1998) and contributes about 49.5 percent of the total volume of food production in Ghana and occupies 21.6 percent of the total cultivated land area (Ministry of Food and Agriculture, 2011). It helps reduce poverty by providing employment opportunities in production, processing and marketing (Scott et al., 2000). This study has been initiated to investigate the contributions women make to local economic development via the cassava industry by examining their roles in the production and processing operations of the crop in Central Tongu District. This is underpinned by the significant contributions women have made in socio-economic development in societies all over the globe.

Adegeye *et al.*, (1999) assert and Ogunleye et al., (2008) that women are active in the cassava industry and that they are more predominant in the processing and marketing than men folk who dominate the production of the cassava roots. In underscoring the role of women in economies of countries, Fomba et al., (2011) hint that women play a central role in cassava production, processing and marketing; contributing about 70 percent of the total agricultural labour in Sierra Leone. The authors further indicated that women are almost entirely responsible for processing cassava that provides them with additional income-earning opportunities and enhances their ability to contribute to household food security. Premised on the active role women play in the cassava industry in most African countries; constituting 50 percent of Ghana's agricultural

labour force (FAO, 2012), it is therefore not surprising that the crop contributes 49.5 percent of the total volume of food production in Ghana (Ministry of Food and Agriculture, 2011).

1.2 Problem Statement

Despite the contribution that women make to the economic development of Ghana is largely felt in the agricultural sector, they have limited access to the socio-economic resources needed for production. Women accounted for 70 percent of total food crop production and 52 percent of the agricultural labour force in Ghana (Duncan, 2004). They however lack access to credit, extension services, production technology, processing, storage and access to markets and this has a limiting effect on the scale of production. There are gender disparity issues in all sectors of Ghana's economy including agriculture, where majority of independent cash crops are cultivated by men while most women farmers grow food crops which do not even have guaranteed prices or inputs (Women Manifesto, 2004). Baah-Ennumh and Adom-Asamoah (2012) also assert that women in the informal sector were constrained by inadequate basic infrastructure, in markets limited access to credit facilities and transportation difficulties.

Women are constrained by unequal access to resources for production as cited by Hill and Vigneri (2009); Doss and Morris (2001) in FAO (2012). They rely on rain-fed production, poor technology and limited access to land for cultivation which also affects their productivity. Only 39 percent of female farmers adopt improved crop varieties, compared with 59 percent of male farmers, because they (women) have less

access to land, family labour and extension services and use less fertilizers and own less mechanical equipment (FAO, 2012).

Women Manifesto for Ghana (2004) posits that women are disadvantaged in access to land, labour, credit and agricultural technologies such as bullock ploughs and fertilizer; and often, have more limited access to family labour and lack the resources to hire labour for their farming and other economic activities. Specifically, a study by Nweke et al in International Institute of Tropical Agriculture (2005), suggests that women who want to plant cassava are usually constrained by the lack of access to new cassava production technologies and other resources.

Women have a harder time obtaining credit because they are perceived as having less quality land and producing more for home consumption and less for the market (FAO, 2012). Thus, inadequacy of credit has been one of the major hindrances to crop production and processing by women since having an access to credit could translate itself into overcoming barriers that confront them in their quest to acquire land, pay for labour services and have access to extension services, modern technology and other agricultural inputs.

Women who are the main processors of cassava still apply rudimentary technology in their gari processing operations and this exposes them to toxic fumes through the smokes that emanate from the fire used in roasting gari (IFAD, 2010). For instance, in Sierra Leone, the production and processing of cassava is by the use of traditional methods and it is generally labour intensive and full of drudgery, which limits productivity and affects cassava value chain system (Fomba et al., 2011). The authors propose that improved processing technology is a key factor to solving the problems

associated with cassava production and processing and this will ultimately encourage cassava enterprise. They further assert that cassava marketing had been grossly under developed and its prices fluctuate widely within a season and between different market locations, with market information not readily available, making it difficult for farmers to take advantage of market opportunities. The authors furthermore suggest that providing more regular and transparent demand for cassava require the potential to improve marketing and utilization, including industrial uses in livestock feed, ethanol, starch and bakery products.

As far as the focus of this study is concerned, any nation that strives to bring development to the doorsteps of the local communities, must in the first place abide by the core principle of creating gender equality. It must be made clear that gender equality does not mean that women and men are or should become the same. It however means that women and men should have equal rights and equal opportunities in all spheres of life. Placing gender equality in the context of local economic development, gender equality means that participation in governance, and access to decent employment opportunities and conditions of work, to resources, and to services, are not negatively influenced by the fact that one is male or female (ILO, 2010).

1.3 Research Questions

The study would be undertaken with the following research questions in focus.

- i. What are the effects of women's socio-economic characteristics on local economic development via cassava production and processing in the Central Tongu District?

- ii. What are the various activities performed by the women in cassava production and processing?
- iii. Are there any support systems available for women in cassava production and processing?
- iv. To what extent are cassava production and processing profitable to women as economic activities in Central Tongu District?
- v. What problems do women in cassava production and processing face in the local economic development of Central Tongu District?

1.4 Objectives of the Study

The main objective of the study was to investigate women's contribution to local economic development of Ghana with particular reference to Central Tongu District. For the purpose of achieving the above overriding objective, the study sought to achieve following five specific objectives.

- i. To examine the effects of women's socio-economic characteristics on local economic development via cassava production and processing in the Central Tongu District.
- ii. To assess the various activities performed by the women in cassava production and processing.
- iii. To ascertain the sources of support systems available for women in cassava production and processing.
- iv. To assess the profitability of cassava production and processing as economic activities.
- v. To examine the problems women in cassava production and processing face in the local economic development of Central Tongu District.

1.5 Scope of the Study

The study was conducted into the operations of nine cassava production and processing women groups in the Central Tongu District of the Volta Region of Ghana. The District was selected because cassava production and processing constitute the main economic activities of the inhabitants. The critical issue the research investigated was women's contribution to local economic development via cassava production and processing as economic activities. The study covered 2012 cassava production and processing activities of the women within the district.

1.6 Relevance of the Study

Employment opportunities associated with cassava production, processing and product marketing has a great potential to reduce poverty among women, especially rural women since they play major role in the cassava industry. In Ghana however, cassava producers and processors remain impoverished due to the many deep rooted challenges they face in their operations. Access to credit still remain a daunting hindrance for cassava producers and processors and this affects the poverty reduction and food security role the crop should play in stimulating growth and development. The study therefore sought to draw the attention of policy makers to designing policies that focus on reducing challenges that militate against the operations of women in cassava production and processing to enhance their contribution to local economic development in order to improve their living conditions.

Women issues take the centre stage in the development phraseology especially in developing countries. The creation of equal opportunities for both men and women is a key ingredient for local economic development. Findings of study could therefore

provide a guide for future investigation into how women, especially the rural women could be empowered to play active role in the local economic of their localities.

1.7 Organization of the Study

The organization of the study came in five chapters. Chapter One contains the general introduction which includes background to the study, the problem statement, research questions, objectives, scope and the relevance of the study. Chapter Two covers women in local economic development and the review of relevant literature on concepts such as development, growth, economic development and local economic development in relation to the research topic. The third chapter dwells on the profile of Central Tongu District and its implications for the study and the nature of women cassava producer and processor groups in the district. The chapter also covers the research design, the study population unit of analysis observation, data sources, data collection instruments, the sampling techniques, pilot testing, data processing and analytical tools. The fourth chapter contains the research data presentation and analysis in relation to the specific objectives set out in the study. The fifth chapter focuses on the major findings, recommendations and conclusion.

CHAPTER TWO

LED AND WOMEN IN CASSAVA PRODUCTION AND PROCESSING

2.1 Introduction

In the previous chapter, the problem statement, objective, scope and relevance of the study were clearly outlined. In this chapter, a thorough attempt was made to give detailed discussion on certain key theoretical concepts on development, economic growth, economic development, local economic development; and a conceptual framework on cassava production and processing and LED. Concepts such as development, economic growth and economic development were explained with a view to bringing home unequivocally the understanding of local economic development (LED).

2.2 The Concept of Development

Development practitioners present several explanations to the concept of development based on their varied view points. Central and fundamental to all views on development is that development is about change as supported by Qamar (2000) that development represents the application of the general idea of progress in the socio-economic and political atmosphere of a nation. In this regard, development can be thought as a process that brings about improvement in the physical conditions that exist among people in societies (Rist, 2006). United Nations Development Programme (UNDP) cited clearly in its Human Development Report of 1991 stating that “The basic objective of human development is to enlarge the range of people’s choices to make development more democratic and participatory. These choices should include access to income and employment opportunities, education and health,

clean and safe physical environment. Each individual should have the opportunity to participate fully in community decisions and to enjoy human, economic and political freedom.”

In this study, a few authorities whose definitions were relevant to local economic development (LED) were cited. Curle (1995) sees development as the creation of a form of society in which certain conditions (namely safety, sufficiency, stimulus and satisfaction) prevail for human beings. On sufficiency, Curle posits that people should be guaranteed enough food, clothing and any material things to enable them contribute their full potential in society. Under Safety, he argues that society should promote peace and eschew violent activities and advocate protection of its members from victimization by the state, police and other individual members of society. Satisfaction condition advocates that the lives of people are generally pleasant, where stimulus creates in the individuals the awareness of their intellectual, emotional, social and spiritual potentials that must be fulfilled. The areas identified by Curle are relevant on the premise that generally development must improve upon the quality of life of human kind otherwise the least said about it the better. The stimulus aspect of his conditions is crucial and relevant for local economic development on the ground that if people are aware of their inherent potential, they are better positioned to contribute to that development in the direction they so desire (under Curle’s safety condition).

Seers (1969), as cited in Todaro and Smith (2009, p. 15) added his contribution to the development phraseology in the book “The Changing meaning of development” and asserts: “The questions to ask about a country’s development are therefore: What has

been happening to poverty? What has been happening to unemployment? What has been happening to inequality? If all three of these have declined from high levels, then beyond doubt this has been a period of development for the country concerned. If one or two of these central problems have been growing worse, especially if all three have, it would be strange to call the result “development” even if per capita income doubled” Thus, for a country to be experiencing development, then poverty, inequality and unemployment should be reducing otherwise, one cannot talk of development. Development of necessity must create more jobs for the people, which will in turn make income available to people and consequently bridge the income gap between the rich and the poor in society.

Sen (1999) also offered a more comprehensive approach to development, claiming development can be seen and he conceives it as the process of expanding real freedoms that people enjoy. For Sen, development requires the removal of the major sources of ‘unfreedom’ such as poverty, tyranny, poor economic opportunities, systematic social deprivation, and neglect of public facilities, intolerance and over-activity of repressive states. In order to operationalize these “freedoms”, Sen used the concept of human capability, which relates to the ability of human beings to lead lives they have reason to value and to enhance their substantive choices. The basic principle Sen conceived here is that the expansion of human capabilities adds to the quality of people’s lives. Sen’s capabilities approach contrasts with narrower views of development that are largely, if not uniquely, restricted to income indicators (for example, gross national product per head) and material growth. His understanding of development includes elements such as social well-being, poverty reduction, income

inequality, gender equality and universal access to primary education, health care and meaningful employment.

The South Commission under the chairmanship of Tanzanian President Julius Nyerere defines development in Rist (2006) as a:

“Process which enables human beings to realize their potential, build confidence, and lead lives of dignity and fulfillment. It is a process which frees people from the fear of want and exploitation. It is a movement away from political, economic or social oppression. Through development, political independence acquires its true significance. And it is a process of growth, a movement essentially springing from within society that is developing” Development in itself is not an event but a process and it begins by creating awareness in people, the potentials that they have; and how such potentials can lead to the achievement of their desires. Key ingredients in this process are the presence of economic, social and political liberties and that society can be its own agent of growth. If members of society get the awareness that its members have certain potentials that can be translated into growth and development, it can provide inspiration for local economic initiatives and that society can be responsible for its own destiny with respect to their socio-economic development.

In contributing further to the development process, Sen argues that freedom is central for two reasons. First of all, there is the intrinsic importance of human freedoms as an objective of development, which has to be clearly distinguished from the obvious instrumental effectiveness of freedoms of different kinds in contributing to economic progress. Thus, the value of such freedoms should not only be judged by their income-generating capacity, but should first and foremost be seen as the principal ends of development in themselves. The position of Sen is highly refreshing, on the

basis that what is called development cannot remain in books on the shelves of policy makers; development speaks for itself and that beneficiaries of the development process can see and feel what really constitutes development.

2.3 The New Approach to Measuring Development

Todaro and Smith (2009) identified two measures of development as traditional and current economic measures and opine that the traditional economic measure considers development purely in economic terms using two national income indicators, annual GDP growth rate and per capita income. The current economic measure on the other hand considers economic indicators in addition to what happens to the living conditions of society. In the 1970s, a new dawn came to reconsider the entire approach to measuring development based on the experience in some countries that between 1950 and 1960, most developing countries achieved very high economic growth yet poverty, inequality and unemployment soared (Todaro and Smith, 2009).

In October, 1974, at a symposium convened in Cocoyoc, Mexico by United Nations Council on Trade and Development (UNCTAD) and United Nations Environmental Programme (UNEP) on "Patterns of Resource Use, Environment and Development Strategies." the participants adopted what has now been known and called "The Cocoyoc Declaration." The Declaration states:

"Our first concern is to redefine the whole purpose of development. This should not be to develop things but to develop man. Human beings have basic needs: food, shelter, clothing, health, education. Any process of growth that does not lead to their fulfillment, or, even worse, disrupts them is a travesty of the idea of development."(UNCTAD/UNEP 1974).

The Cocoyoc declaration was in a response to the development paradox in which high economic growth targets were achieved but did not reflect in the social conditions of society. This concern opened the flood gate for several commentators on the subject matter of development. For instance, Tatyana (2004) in his book “Beyond economic development” postulates that it is true that economic growth increases a nation’s total wealth and enhances its potential for reducing poverty and solving other social problems but history offers a number of examples where economic growth was not followed by similar progress in human development. The author again pointed out clearly that growth was achieved at the cost of greater inequality, higher unemployment, weakened democracy; and loss of cultural identity and overconsumption of natural resources needed by future generations. Measuring development based purely on economic variables such as GDP per capita and annual growth rates was predominantly characterized by several social and political challenges.

Similarly, Todaro and Smith (2009) also cited same paradox indicating that several developing economies by 1950s and 1960s achieved their economic growth targets but surprisingly the living conditions of the masses remained unchanged. These proclamations were made to drum home the idea that something was indeed wrong with the myopic definition of development which only sought to consider development as economic phenomenon. If in the midst of achieved economic growth targets, poverty at the time was widespread; income inequality was on the increase coupled with mass unemployment then it made sense to the researcher to call for a redefinition of development to embrace reduction in poverty, inequality and unemployment.

For Sen (1999), income growth in itself should not be the litmus test for development theorist, but instead the question of whether the capabilities of people to control their own lives have expanded. While acknowledging that incomes can have a high potential to contribute to the expansion of the real freedoms people enjoy, Sen maintains that the relationship between income and human development is by no means direct or automatic hence making income indicators alone an inadequate indicator of the quality of people's lives.

The challenges associated with the use of purely economic indicators to measure development have brought a measure that has made human beings the centre of the global development process. This paradigm shift led to what is now known in development parlance as the Human Development Index (HDI) created by, Mahbub ul-Haq of Pakistan and his close friend and collaborator, Amartya Sen of India (UNDP,2010). The index is a composite measure of achievements in three basic dimensions of human development, a long and healthy life, access to knowledge and a decent standard of living, and for ease of comparability, the average value of achievements in these three dimensions is put on a scale of 0 to 1, where greater is better, and these indicators are aggregated using geometric means (UNDP, 2010). This measure represents better index for measuring development that does not only cover the economic aspect of living standards but also the social conditions of people.

2.4 Economic Growth and Economic Development

In the development parlance, two economic concepts, economic growth and economic development deserve critical attention. These two economic concepts are always fundamentally distinct and distinguishable with the former being a pre condition for

the latter. According to Gillis et al., (1992), economic growth refers to a rise in national income or income per capita. For UNDP (1996), economic growth is the means and human development is the end and thus emphasizing that though economic growth is necessary for development, it is just a necessary condition for the entire development process.

Economic development on the other hand refers to an increase in per capita income accompanied with fundamental changes in the structure of an economy (Gillis et al., 1992). For economic development to take place, the per capita income should be rising alongside with structural changes, or changes in the key sectors of an economy such as agriculture, industry and service. Gillis et al., (1992) posit further that rising share of industry along with falling share of agriculture in national product (GDP) and increasing percentage of people who live in cities (urbanization) rather than the countryside constitute crucial structural changes in an economy. The authors further argue that when nations enter into economic development, the consumption patterns of the people change from spending on necessities to consumer durables and eventually to leisure-time products and services. One key element in the occurrence of economic development requires that citizens of a country be the major participants in the processes (though foreigners are inevitably involved) that led to changes in the structure of the economy since participation in the processes of development implies participation in the enjoyment of the benefits as well as the production of those benefits (Gillis et al., 1992).

For Todaro and Smith (2009), economic development refers to the capacity of a national economy whose initial economic condition has been more or less static for a

long time to generate and sustain an annual increase in Gross National Income (GNI) at rates of 5% to 7%. These authors argue further that in the past, economic development necessitated planned alteration such that the share of agriculture in the structure of production and employment decline giving way to an increasing share of manufacturing and service industries. Thus, according to the authors, a country that is experiencing economic development, industry's share of the country's GDP should be increasing while agriculture's share should be on decline. The manufacturing and service sectors should provide greater percentage of GDP for the people.

2.5 The Concept of Local Economic Development

Local Economic Development (LED) is an evolving concept which is distinguishable from economic growth (Blakely and Leigh, 2009, p. 76) and lacks one unique theoretical definition since several authors define it as they best deem it fit. In this study however, an attempt has been made to review the works of a few authorities whose definitions provide key relevance to the study. Bartik (2003) for instance defines LED as increases in the "Local economy's capacity to create wealth for local residents." Bartik postulates that such increases occur if local resources, such as labour and land, are used more productively and it is arguably affected by all local government activities. In the era when national governments face increasing unemployment and other mounting demands to provide communities with water, schools infrastructure, electricity and good road networks, communities that have the necessary capacity can initiate self help projects to ease pressure on central government since according to Bartik (2003) local economic development can occur with or without government efforts.

The World Bank as cited by Helmsing (2003), in Ramukumba (2012, p. 10), defines LED as the process by which public, business and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation. The World Bank also indicated that the purpose of local economic development is to build up the economic capacity of a local area, in order to improve its economic future and the quality of life for all, which is similar to the capacity building position taken by Bartik (2003).

Rogerson (2000), as cited in Ramukumba (2012) defines LED as a process whereby partnerships between local governments, community-based groups and the private sector are established to manage existing resources, to create jobs, and to stimulate the economy of a well-defined territory. LED activities, though embodies a clear economic focus, it is not simply about economic growth, rather it is geared ultimately towards attaining a sustainable development pattern which accommodates and reconciles economic, social and ecological issues and objectives (Rogerson,2009).

2.5.1 The Historical Development and Focus of LED

According to Gwen et al., (2006, p. 1), local economic development historically evolved in the early 1970s as a policy approach by governments in a pragmatic response to the movement of businesses and capital from one location to the other for competitive advantage. On this Gwen et al., (2006) state:

“By actively reviewing their economic base, communities gained an understanding of the opportunities for, and obstacles to, growth and investment. With this newfound understanding, communities attempted to expand their economic and employment

base by devising and undertaking strategic programmes and projects to remove obstacles and facilitate investment”

Putting the above business-and-community reaction in perspective, it is obvious that the idea of LED as a policy strategy is very relevant in the Ghanaian context. The age old mentality of “Government will provide for us” needs a fundamental restructuring to new ways of thinking that engender community driven initiatives for sustainable development. LED as an emerging development approach to policy making is multidisciplinary in focus and encompasses physical planning, economics and marketing and it also incorporates many local government and private sector functions such as environmental planning, business development, infrastructure provision, real estate development and finance (World Bank, 2004).

The fundamental impetus for LED is simply about communities continually improving their investment climate and business enabling environment with a view to enhancing competitiveness, retain jobs and improve incomes. Local economic development is about communities taking the destiny of their developmental agenda into their own hands. Despite the fact that LED focuses on community activated initiatives, the communities and the central or local government including non-governmental organizations (NGOs) can come into partnership to prosecute developmental projects such as building school infrastructure, health facilities, and provision of water, electricity and even building road networks. The position of the researcher has been well corroborated by the World Bank (2004), when it indicated that LED offers local government, the private and non-profit sectors, and local communities, the opportunity to work together to improve the local economy. However LED approaches are most successful if pursued in partnership with local

government strategies (World Bank, 2004). The Bank further recommends that a local government can pursue LED strategies for the benefit of its jurisdiction, and individual communities and areas within a local government's jurisdiction too, can also pursue LED strategies to improve their economic competitiveness.

Local communities have different LED needs to which they respond in many different ways, and as such a variety of approaches can be taken including:

- i. Ensuring that the local investment climate is functional for local businesses;
- ii. Supporting small and medium sized enterprises;
- iii. Encouraging the formation of new enterprises;
- iv. Attracting external investment (nationally and internationally);
- v. Investing in physical (hard) infrastructure;
- vi. Investing in soft infrastructure (educational and workforce development, institutional support systems and regulatory issues);
- vii. Supporting the growth of particular clusters of businesses;
- viii. Targeting particular parts of the city for regeneration or growth (areas based Initiatives);
- ix. Supporting informal and newly emerging businesses,
- x. Targeting certain disadvantaged groups (The World Bank, 2004).

2.5.2 The Operation of Local Economic Development

Drawing from the historical, developmental and policy approach perspectives, LED is intended for a local and community based initiatives that are driven by local stakeholders which involve identifying and using primarily local resources, ideas and skills in an integrated way to stimulate economic growth and development in the

locality (World Bank, 2004). Local stakeholder functionality and activism are key ingredients in any LED strategy intended to expand the social and economic opportunities of the local citizenry. Communities are unique and have different endowments; some have vast land that support cocoa plantation, mineral deposits, and physical features that support tourism. Others have land area that support cassava and maize cultivation, and others rear cattle for their livelihoods. Central Tongu District for instance, has the soil type and climate which support year round production of maize, groundnuts, beans and particularly cassava. A cross section of the land area that stretches along the Lower Volta Basin engages in aquaculture culture businesses and vegetable production (since irrigation facility is possible).

There cannot be single solution to LED that will work in every local area since each local area has a unique set of opportunities and problems, and must develop an approach to LED that is specific to the area. LED as a community driven approach to sustainable development, should not engage in one “Size fits all” approach to development as those prescribed by the Breton Woods Institutions including the International Monetary Fund and the World Bank in the case of fiscal, monetary and some development policies. Every community is unique and has unique needs based on their developmental aspirations and focus, so managers of LED programmes should think out of the box to identify the needs of the communities vis-à-vis the economic opportunities within the community.

For sustainable LED programmes, the World Bank identified some important factors that are influential, including good relationships between unions and employers, good relationships between the public and private sectors, good housing, transport and

education facilities, low crime and community enthusiasm and commitment. These conditions according to the World Bank are critical since investors and entrepreneurs who decide to set up businesses will only do so where they consider that the local environment is stable and secure with limited negative factors such as civil unrest that negatively impact on their businesses.

2.5.3 Local Governance and Local Economic Development in Ghana.

Ghana's Local Government Act, Act 462 of 1993 gave District Assemblies the responsibility to oversee the overall development of their areas of jurisdiction and by implication, the Assemblies are to ensure the development of all sectors (real, social, and the economic). The social sector includes the provision of basic facilities such as potable water, education, health and housing, real sector covers agriculture and industry, and the economic sector consists of the provision of road and communication networks, market infrastructure and electricity in their respective local economies.

The National Development Planning Commission Act, 1994 (Act 479) and National Development Planning (Systems) Act, 1994 (Act 480) provided the legal framework for District Assemblies to act as planning authorities; thereby suspending 'top-down' planning and embracing 'bottom-up' planning approach (Inkoom, 2009). In juxtaposing local governance and the concept of LED, it is refreshing to note that the latter has provided the necessary and adequate foundational structures for an effective LED to take place in all Districts in Ghana. It is obvious to note that District Assemblies per the framework, are supposed to be acting as LED management outlets at the local communities in Ghana. It is in this light that the World Bank (2004)

argues that decentralization reforms, advancing in many countries, provide ample opportunities to tap into the potential of local economies.

Improving the quality of life; creating new economic opportunities and fighting poverty depends upon the ability of communities or local government to understand the processes of LED, and act strategically in the changing and increasingly competitive market economy (Gwen et al., 2006, p. 1). Ghana has implemented local governance over two decades but majority of the citizenry are still living under conditions of squalor and destitution. This could be as a result of the fact that local authorities lack the understanding of what they are to do in the local communities. In fact, they are unable to provide effectively the necessary environment for development in their areas of political jurisdictions. To eradicate the existence of local government-community development paradox with a view to bringing development to the local communities, managers of local government need to be more proactive in addressing developmental needs.

2.6 Cassava and Gender

Gender as claimed by Sinkaiye (2005) in Ogunleye (2008) is a term often associated with roles and responsibility of males and females in society as a social classification of sex and it is the socio-cultural differences that exist between males and females as against the biological differences. The interrelations of these roles thus produce a mutual understanding of each other's capabilities and constraints at different stages of life (Ogunleye, 2008). It is said that the focus of gender analysis is not the biological differences between men and women but rather on their experiences as members of society (Ogunleye, 2008). Gender roles therefore provide an insight into issues

affecting women and it is focused mainly on the relationship of both men and women to the social and economic structures of a society (Ogunleye, 2008). For ILO (2010), gender refers to the social attributes and opportunities associated with being a female or a male and the relationships between women and men, girls and boys while sex refers to the universal biological differences between females and males. According to the organization, gender attributes, relationships and opportunities are socially constructed and learned in a socialization process and they vary across time and space, between societies and cultures, they are therefore context-specific and can be modified.

ILO (2010), further argues that gender roles are what a society or culture constructs and prescribes as proper roles, behaviour and personal identities for women and men and these characteristics affect power relations between women and men at all levels and can result in inequality in opportunities and outcomes for some groups. Women and men contribute to the local economy in various capacities and possess distinct knowledge and skills that correspond to these roles, which are the building blocks for realizing the potential of a locality (ILO, 2010). On the basis of gender roles, cassava therefore provides different opportunities for both men and women farmers and processors (International Institute of Tropical Agriculture, 2005).

A study by Nweke *et al.*, (2002) and cited by the International Institute of Tropical Agriculture (2005) identified five important relevant gender related issues about cassava. As per the above study, both men and women for instance, make significant contributions of their labour to the cassava industry, with each specializing in different tasks; men work predominantly on land clearing, ploughing and planting,

while women specialise in weeding, harvesting, transporting, processing and marketing. The study claims again that both men and women play strategic, but changing roles in the cassava transformation process and opine that as cassava becomes a cash crop, men increase their labour contribution to each of the production and processing tasks. The study again reveals that introduction of labour saving technologies in cassava production and processing has led to a redefinition of gender roles in the cassava food systems. Finally, the study posits that women who want to plant cassava are usually constrained by the lack of access to new cassava production technologies and other resources.

A study conducted by Kormawa and Asumugha and cited in International Institute of Tropical Agriculture (2005) in Nigeria reveals that as cassava is commercialized, households in cassava producing areas invest more on the education of their children. The commercialization of cassava will offer women the economic power to finance the education of their children. The institute argues also that as opportunities for commercialization increase (arising from favourable market opportunities for cassava and its products), the number of women involved in processing increases. Thus, the growth in cassava production is therefore likely to provide increased employment opportunities for women (International Institute of Tropical Agriculture, 2005).

In contributing to the gender and cassava debate, Spencer and Associates claim in International Institute of Tropical Agriculture (2005) that as mechanized processing equipment (such as graters and mills) are acquired, the involvement of men in cassava processing tends to increase, as they often control and operate these machines and so women may therefore lose some of the benefits of increased employment, as they lose

control over some of the income. To forestall the occurrence of the phenomenon in which the use of processing equipment could lose some benefits of increased employment for women, the International Institute of Tropical Agriculture prescribes that some steps should be taken to assist women by getting them organized into groups that can effectively carry out the commercialization of the commodity. Access of the organized women groups to credit for the acquisition of postharvest machinery should be increased and they should be trained properly to operate the equipment, enhance their postharvest and microenterprise skills. For International Institute of Tropical Agriculture (2005), the needs of women should be kept in mind even at the project design at the implementation stages to prevent any possible negative impacts of increased commercialization in the production and processing of cassava.

2.7 The Performance of Cassava in the Agriculture Sector of Ghana

The origin of cassava (*Manihot esculenta*) plant can be traced to South America. The crop was further brought to Africa by Portuguese explorers in the 16th and 17th centuries through their trade with the African coasts and nearby islands and it eventually spread to almost all parts of tropical Africa (Department of Agriculture, Forestry & Fisheries (Republic of South Africa), 2010). Among the starchy and cereal staples such as cocoyam, yam, maize, rice, millet, sorghum and plantain, cassava is one crop that is cultivated over large land space in Ghana (Ministry of Food and Agriculture (2011). According to the Ministry of Food and Agriculture, in 1999, cassava cultivation covered 640,000 hectares and 875,000 hectares in 2010 and in terms of volume of production; it registered 8,107 metric tons in 2000, 11,351 metric tons in 2008 and 13,504 metric tons in 2010. Women are engaged in the cultivation of cassava right from the preparation of the land, planting, maintenance, post harvest

processing; and marketing. In Central Tongu District, cassava is produced on both small-scale and large scale and the roots are processed and prepared as a subsistence crop for home consumption and for sale.

The utilization of cassava has been numerous; it can be processed into gari, fufu, cassava flour for bread and doughnuts making, 'konkonte', agbelikor (Ewe parlance for cassava that is eaten in its cooked state) or ampesi (Akan parlance for cassava that is eaten in its cooked state). Other uses of cassava include edible starch, tapioca cakes and biscuits. According to Nweke et al in International Institute of Tropical Agriculture (2003), cassava performs five main roles namely, famine reserve crop, rural food staple, cash crop for urban consumption, industrial raw material, and foreign exchange earner. Cassava leaves are consumed as vegetable and the crop itself serves as raw material for industries as well as being a means of alleviating poverty (Nandi et al., 2011).

Technical and financial feasibility into cassava production and processing in Ashanti and Brong-Ahafo regions of Ghana by a team of experts from Regional Cassava Processing and Marketing Initiative (RCPMI) and Roots and Tubers Improvement Marketing Programme (RTIMP) revealed that cassava wastes such as peel, barks and wastewaters provide feedstock to generate bio-energy (electricity, hot or cold air) by building gasifier and biogas plant (IFAD, 2010). The cultivation and on-farm processing of cassava provide a source of rural employment particularly for women (Sarma and Kunchai, 1991). Among all food crops, cassava is grown on large scale and occupies 21.6 percent of total land cultivated area and accounts for 49.5 percent of the total volume of food production in Ghana (MoFA, 2011) as in Tables 2.1 and 2.2 respectively.

Table 2.1: The Performance of Cassava and other Crops in Ghana (2000-2010)

Crop/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Maize	1,013	938	1,400	1289	1,158	1,171	1,189	1,220	1,470	1,620	1,872
Millet	169	134	159	176	144	185	165	113	194	246	219
Rice(Paddy)	215	253	280	239	242	237	250	185	302	391	492
Rice(Milled)	129	152	168	143	145	142	150	111	181	235	295
Sorghum	280	280	316	338	287	305	315	155	331	351	324
Cassava	8,107	8,966	9,713	10,239	9,739	9,567	9,638	10,218	11,351	12,231	13,504
Cocoyam	1,625	1,688	1,860	1,805	1,716	1,686	1,660	1,690	1,688	1,504	1,355
Plantain	1,932	2,074	2,279	2,329	2,381	2,792	2,900	3,234	3,338	3,563	3,538
Yam	3,363	3,547	3,900	3,813	3,892	3,923	4,288	4,376	4,895	5,778	5,960
Total	16,833	18032	20,075	20371	19,704	20,008	20,555	21,302	23,750	25,919	27,559

Source: Statistics, Research and Information Directorate, (SRID), MoFA.

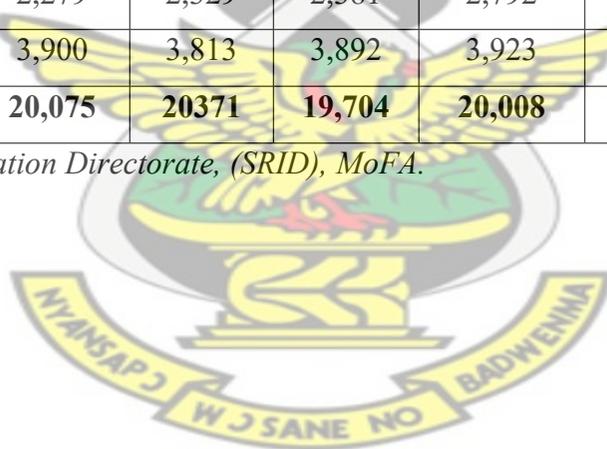
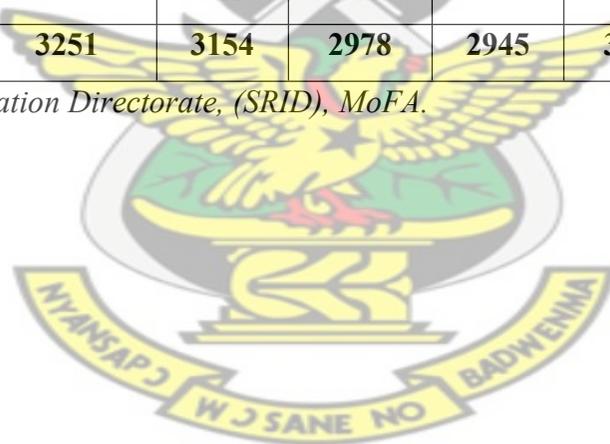


Table 2.2: Land Area for Cassava and Food Crops in Ghana ('000ha): 2000-2010

Crop/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Maize	695	713	940	792	733	740	793	790	846	954	992
Millet	208	193	198	207	182	185	200	163	182	187	177
Rice	115	135	123	118	119	120	125	109	133	162	181
Sorghum	289	329	337	346	298	305	320	208	276	267	253
Cassava	660	726	794	807	784	750	790	801	840	886	875
Cocoyam	247	262	282	277	270	255	260	258	252	225	205
Plantain	244	265	277	286	281	290	299	305	312	325	328
Yam	261	287	300	321	311	300	325	324	348	379	385
Total	2719	2910	3251	3154	2978	2945	3112	2958	3189	3385	3396

Source: Statistics, Research and Information Directorate, (SRID), MoFA.

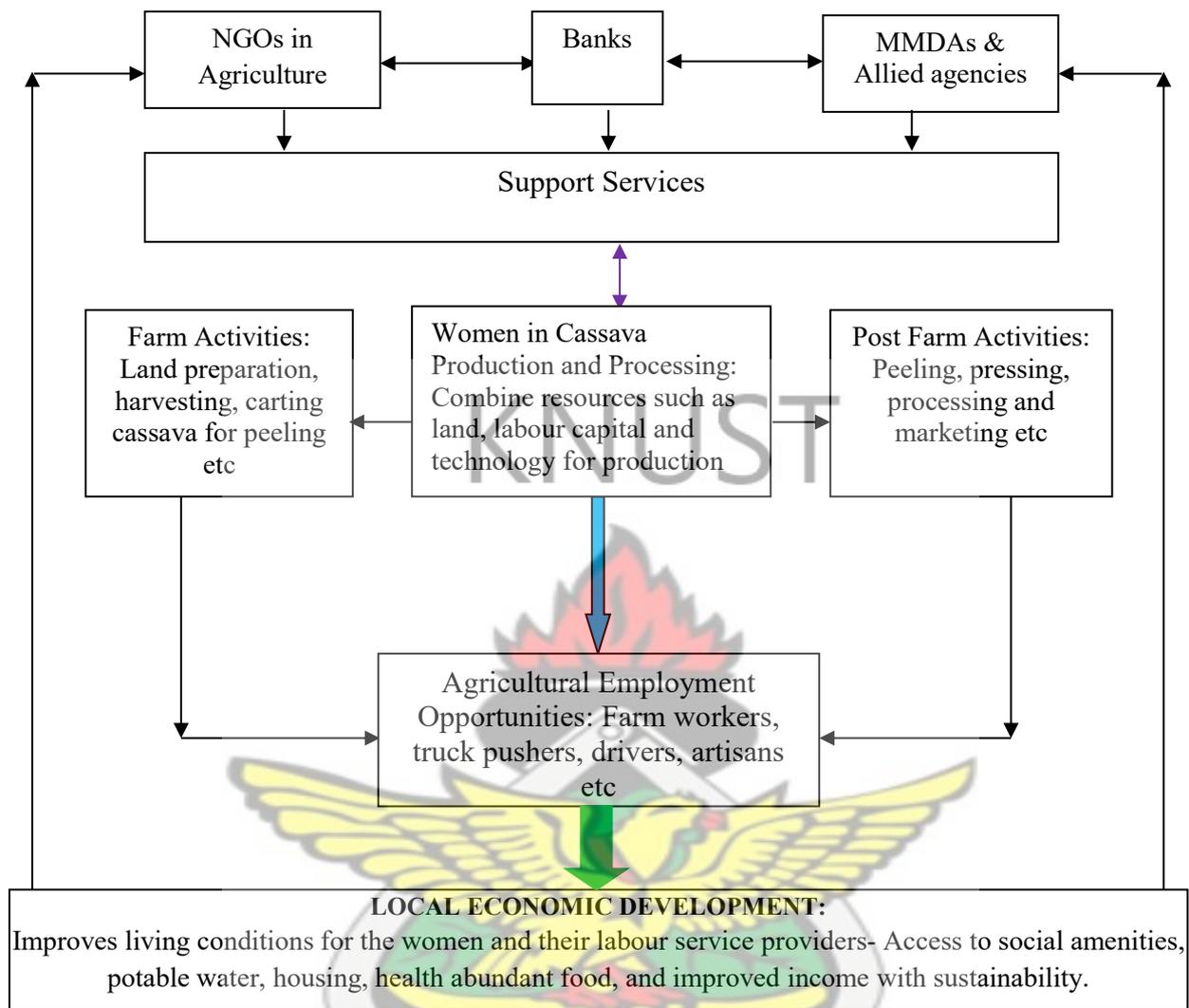


2.8 Cassava Pests and Diseases

The International Institute of Tropical Agriculture (2005) identifies several diseases and insect pests that plague cassava and consequently cause economic losses. These diseases include cassava mosaic disease (CMD), cassava bacterial blight (CBB), cassava mealy bug, green spider mite (GSM), and the large grain borer, which attacks dry chips of cassava during its storage process. To reduce the impact of the CMD, farmers need access to improved, CMD-resistant varieties that are normally introduced by IITA.

Pests that affect the crop include rodents, termites, anthracnose, root rot, and stem girdlers. The mealy bug and GSM have been largely controlled through Africa-wide biological control efforts of International Institute of Tropical Agriculture (IITA) and its partners. The white ants (termites) destroy stems that are planted before they sprout. Various chemical control measures are recommended, but the need for safe use and high costs restricts their use among many small farmers who practice mixed cropping. The menace of rodents is a regular occurrence in the field and causes root yield losses due to cassava mosaic disease.

Figure 2.1: Women in Cassava Production and Processing for LED

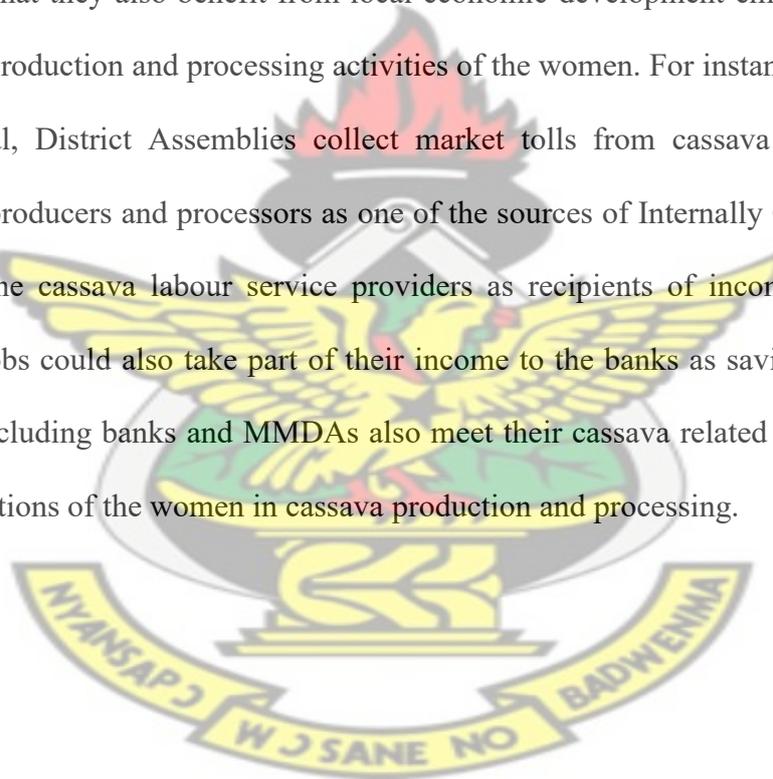


Source: Author's Construct, August, 2013.

Figure 2.1 shows a conceptual framework for how women in cassava production and processing with support from local government (MMDAs), NGOs and Banks, could bring about local economic development. The women receive support from support service providers (shown by the bi-directional purple arrows) such as those aforementioned and combine the resources such as land, available technology and labour services together by executing both farm and post farm activities. The two types of activities create agricultural job opportunities for several persons namely; the women themselves, truck pushers, drivers, graters and artisans who design improved

pressing machines and “wayside” cassava product sellers as indicated in the box by the blue block arrow.

The agricultural job opportunities that people receive by their engagement in the farm and post farm activities stimulate economic growth through which local residents are economically empowered resulting in local economic development as depicted by the green block arrow. Local economic development brings about improved living conditions to the local residents, women especially and the farm and post farm labour service providers. The two arrows that flow upward to the support service providers indicate that they also benefit from local economic development emanating from the cassava production and processing activities of the women. For instance, Metropolitan, Municipal, District Assemblies collect market tolls from cassava product sellers, cassava producers and processors as one of the sources of Internally Generated Funds (IGF). The cassava labour service providers as recipients of income from cassava related jobs could also take part of their income to the banks as savings. In addition, NGOs including banks and MMDAs also meet their cassava related food needs from the operations of the women in cassava production and processing.



CHAPTER THREE
PROFILE OF CENTRAL TONGU DISTRICT AND RESEARCH
METHODOLOGY

3.1 Introduction

The previous chapter covered explanation of few concepts in the development phraseology including economic growth, economic development, meaning of development and Local Economic Development. A conceptual framework depicting how women in cassava production and processing bring about LED was also discussed.

In this chapter, the profile of Central Tongu District and its implications for LED including the nature of women cassava producer and processor groups were discussed. The research design and the data collection and the procedures followed in the selection of the samples were also clearly explained. A total number of 171 women were selected from among nine women groups engaged in cassava production and processing in the district. Only organized women groups were studied on the ground that currently, institutions that support agricultural activities prefer group farmers to the individuals since it is administratively cost saving dealing with the groups than the individuals. Even though women constitute the primary focus of the study, a different questionnaire was purposely designed to know roles ten men found in Amegakofe Newlife group played in cassava production and processing.

3.2 Profile of Central Tongu District.

Adidome is the administrative capital for the Central Tongu District. The profile content covered includes climate, topography, drainage; soil types and the vegetation

types. The local economic development implications of the district profile were also examined.

3.2.1 Climate

The climate is tropical and greatly influenced by the South – West Monsoons from the South Atlantic and the dry harmattan winds from the Sahara desert. There are two rainy seasons; the major one from mid – April to early July and the minor from September to November. The average annual rainfall varies from 900mm to 1100mm with more than 50 percent of it falling in the major season. Rainfall generally is inadequate even during the major season, which adversely affects both crop and cattle production in the district.

Temperature and relative humidity vary little throughout the year. The mean temperature is 27°C and the maximum and minimum vary from 22°C to 33°C respectively. March is the hottest month while July and August are the coolest months. Average relative humidity is about 80%, making the weather quite conducive for human activities, such as habitation, farming and recreation.

3.2.2 Topography

The topography is generally gentle, ranging from near sea level to about 18 meters above sea level. The areas near the Volta River are at a higher elevation, falling gradually backwards and rising again into the Adaklu Hills. There are few inselbergs, which rise abruptly from the plains, namely the Awakpe, Asiekpe and Kluma Hills, which are composed of granite rocks. The Todze Hill located near New Bakpa is composed mainly of gravel. The gentle topography brings about low development costs and favours large-scale mechanized farming. The granite and gravel hills

mentioned above also serve as good sources of construction material. However, there are serious overflows during the rainy season, which calls for channeling, diversion or other means of correction to make the area productive.

3.2.3 Drainage

The district is drained by the Kolo, Aklakpa, Gblor, and Nyifla streams and their numerous tributaries into the Volta River, which runs North – South through the district. The Todze and its western tributaries drain the eastern part of the District into the Avu lagoon (in the South Tongu District). In the rainy season, these streams overflow their banks, causing damage to roads and farms. Channeling, diversion, basin clearing or other means of correction could re-drain large areas of agricultural lands and boost agricultural production.

There are large number of inland creeks including Aklamada, Amido, and Akplordodi, which could be developed into fish breeding grounds. Several ponds and dugouts or dams are found in the district. The major ones are located at Atiteti, Adudornu, Mafi Kumase, Adidokpawu, and Teleafenu. These serve as main sources of water supply for the inhabitants and livestock. Most of these ponds and dugouts dry up in the dry season.

3.2.4 Soil Types

There are dominantly medium to moderately coarse textured alluvial soils along the Volta River. These soils are also very difficult to cultivate because they have low water holding capacity. They are also shallow (low effective rooting depth). They are however, suitable for rice and sugarcane cultivation under irrigation. They form the

raw material for pottery, brick and tile industries. Areas between Adidome, Anfoe, Kpedzeglo, Mafi Kumase, Sasekpe and Bakpa Avedo consist of moderately coarse or sandy loams, which drain easily and are suitable for agricultural purposes.

The soils however, have low capacity to retain soil nutrients for plant use, and so need regular use of fertilizers. The undulating topography and the loose nature of these soils have led to serious gully erosion in most settlements, affecting road and drainage construction. According to the Central Tongu Directorate of Food and Agriculture, the sandy loams and clays in the district support numerous crops such as cassava, rice, maize, cowpea, vegetables and mangoes.

3.2.5 Vegetation Types

The Central Tongu District lies within the tropical savannah grassland zone with vegetation being dense along the Volta River basin. This is basically due to the presence of more fertile soils and better subsoil moisture. The vegetation consists of mangoes, oil palms, baobab, silk cotton, acacia etc. Farther from the river, the vegetation is sparse, predominantly grassland, interspersed with neem trees and guinea grass, digitaria decumbent and fan palms, which dot the Mafi Kumase and Avetakpo areas. The latter are used extensively as timber for housing purposes in the district. Neem and other trees are harvested throughout the district for fuel and charcoal burning. The shrub and grassland areas present suitable grounds for cattle grazing which make the district one of the largest cattle producing areas in the country. Uncontrolled grazing and the frequent bush fires are however, gradually reducing such areas into near desert lands.

altitude of 150m, with temperatures averaging 25°C and 29°C and exceptional varieties growing at altitudes of up to 1500m. The minimum and maximum temperatures are respectively, 22° C and 33° C which favourably compare with the temperature range provided by the Department of Agriculture and Fishries (2010) for cassava production.

The topography of Central Tongu District is gentle, ranging from near sea level to about 18 meters above sea level fitting into the topographical requirement for cassava production. Granite obtained from Awakpe, Asiekpe and Kluma Hills in the district provide quarry materials for road construction at moderately low cost and the gentle topography itself provides less difficulty in road construction. The moderately coarse or sandy loamy soil type which drains easily and are found in areas between Adidome, Anfoe, Kpedzeglo, Mafi-Kumase, Sasekpe and Bakpa-Avedo are suitable for agricultural purposes and support the production cassava.

On drainage, communities located along the Volta River Basin when provided with irrigation facilities could engage in all year round production of crops including vegetables. Aqua culture opportunities also exist for communities that live along the Volta Basin and in addition inland creeks including Aklamadaw, Amidoie, and Akplordodi, offer breeding grounds for fish. In terms of vegetation, the district lies within the tropical savannah grassland zone. Shrub and grassland areas provide suitable grasses for cattle grazing and favour the rearing of cattle in the district. The cattle provide adequate source of meat, job opportunity for some people in the district.

3.3 Nature of Women Cassava Producer and Processor Groups

Despite the fact that the women come under identifiable groups they do not operate purely under group management, each operates as individual in the management of her business. Each member takes personal management decision in advancing her business and each individual has her costs and revenue structures. They come under different identifiable groups for the purposes of meeting requirements of some supporting institutions in accessing assistance. As groups they have contact persons for the purposes of correspondence and capacity building programmes are organized for them as identifiable groups. It is in this light that any study into their operations must consider them as individuals.

3.4 Research Design

Research design is a useful tool in a research since it guides the entire research process, provides the researcher with a blueprint for studying social questions, energizes the investigator in specific directions; and enables the researcher to anticipate potential problems during the implementation stage as cited by Black and Champion in AL-Dehailan (2007). Thus, Research design constitutes the master plan which specifies the methods and procedures for collecting and analyzing data or the strategy, blueprint that plans the action for collecting research data.

Survey research design was applied to assess the contributions that women make to local economic development via cassava production and processing in the district. A survey is a data gathering and analysis in which respondents answer questions developed in advance; and it allows one to generalize beliefs and opinions of many people by studying a subset of them (Kasunic, 2005). According to Yin (2003), the

decision to use one research design or the other is determined by three conditions, namely the form of the research question, the control an investigator has over actual behavioural events and the focus on contemporary instead of historical data. Case studies are applicable for ‘how and why’ questions and when the investigator has no control over the phenomenon under investigation as well as when the focus is on contemporary issues. Yin further argues that survey research and other quantitative research designs on the other hand go with “who, what, where, how many, how much” questions and focus on contemporary data; but not applicable when the investigator has no control over the phenomenon.

Hutchinson (2004) defines survey research simply as a means of gathering information through self-report using questionnaires and interviews. Hutchinson highlights the popularity of survey research as the most preferred method in needs assessment, programme evaluation, attitude measurement, political opinion polling, and policy analysis as well as for simple descriptions of behaviour, activities and population characteristics. This research methodology has become attractive due to its applicability in research situations where direct manipulation of variables is not feasible and unethical (Hutchinson, 2004).

3.5 The Study Population

The word population is defined as the aggregate of units from which a Sample is chosen (Jayaraman, 1999). In all, women who had organized themselves into groups in cassava production and processing in Central Tongu District were studied. As per documentation collected from Central Tongu Directorate of Food and Agriculture, nine women groups were identified to have engaged in the production and processing of cassava as shown in Table 3.1.

3.6 Sample Size Determination

Mathematical sample determination formula, $(n) = N/(1 + N\alpha^2)$ cited by Yamane in Ghimire (2010) was used to determine the number of respondents. In the formula above, 'n' = the sample size, N = the population size of the sample frame (population of women cassava producers and processors) and α specifies the significance level or the margin of error. A confidence interval of 95 percent was used to determine the total of number women sampled for the study. Using the above sample size determination formula, 171 respondents were sampled from among 296 women from the nine women groups across the district. The calculation yielding the 171 respondents is as follows:

$N = 296$, $\alpha = 0.05$, therefore, from above formula, the sample size,

$n = 296 / [1 + (296 * 0.05 * 0.05)] = 171$. Table 3.1 shows the detailed processes involved in the proportional determination of respondents for each women group.

3.7 Sampling Method and Technique

Sample frame (the active list of the population) was collected from the database of Central Tongu Directorate of Food and Agriculture and updated. The update became necessary to ensure complete compilation of only members who were active within the women groups and this brought about the sample frame number of 296 from among which the sample size of 171 was obtained using the above formula.

Probability sampling method involving proportional stratified sampling technique was employed in determining the number of women sampled from each group. Stratified sampling is a sampling technique that involves the division of a heterogeneous population into sub-populations, usually known as strata with each being internally

homogeneous (Jayaraman, 1999). Proportional stratified sampling ensures that samples are selected based on the proportion they represent out of the total population. According to Jayaraman (1999), stratified sampling provides a better cross section of the population than the procedure of simple random sampling; and that geographical proximity is sometimes taken as the basis for stratification. The assumption here is that geographically contiguous areas are often more alike than areas that are far apart from one another.

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Simple random sampling was applied after proportional stratified sampling technique was used to specify the number of women needed in each group to respond to the questionnaires. The selection procedure for the 171 respondents using lottery technique was as indicated below. Small 'Yes' and 'No' cards were designed; 'Yes' was written on 171 of them and 'No' on 125. Members within the sampling frame (296 in number) from among the nine women groups across the district who picked 'Yes' cards from a box containing both 'Yes' and 'No' cards (cards reshuffled from time to time) responded to the questionnaires, hence constituting the respondents for the study and on the contrary members who picked 'No' cards were not interviewed. Thus, the lottery procedure was followed for each group across the district taking into consideration the sampling frame number and the number of samples already determined for each of the nine groups using the sample determination formula until the 171 respondents out of the 296 women farmers within the sampling frame were selected. The cards were picked by the members within the sampling frame without replacement. Simple random technique was applied to ensure equal probability selection for the 296 elements within the sampling frame.

Despite the fact that cassava production and processing are unique and common to all the communities from which the respondents were drawn, the researcher was of the view that the application of stratified sampling technique was more relevant. The relevance of stratified sampling therefore became necessary in order to accommodate some external and internal differences in terms of differences in farm locations, differences in management styles, educational level differences, and differences in cost of production and revenue structures, support systems and accessibility to markets. Details of the sampling and number sampled were as depicted in Table 3.1.

Table 3.1: Stratified Proportional Selection of Respondents from the Groups

No	Name of Group	Location	No in Group	Respondents
1	Lorlorsor Women	Zongo	35	$35/296 * 170.11$ = 20
2	Dagbanadu Women	Klukpo	32	$32/296 * 170.11$ = 18
3	Alormesor Women	Ameworlorkofe	21	$20/296 * 170.11$ = 12
4	Miyingor Farmers	Kpedzeglo	24	$24/296 * 170.11$ = 14
5	Christ Universal Women Association	Mafi Akyemfo	20	$20/296 * 170.11$ = 11
6	Akorfafa Women	Agbadzikofe	40	$40/296 * 170.11$ = 23
7	Milenorvisi Women	Mawoekpor	45	$45/296 * 170.11$ = 26
8	Lorlorlonyo Youth	Zongo	30	$30/296 * 170.11$ = 17
9	Amegakofe Newlife	Amegakofe	50	$50/296 * 170.11$ = 29
Total			296	171

Source: Central Tongu Directorate of Food and Agriculture, August, 2013.

3.8 Sources of Data and Data Collection Instrument

For the phenomenon under investigation, data was collected from both primary and secondary sources. Primary data refers to the data collected by the researcher through firsthand observation and investigation. Primary data could also come from the

researcher's own observations or experience, or from the information gathered personally from other people. Secondary data, on the other hand, involves the collection of information from studies that other researchers have made of a subject and the easiest and most accessible places are libraries and the internet (Dawson, 2002).

Primary data was collected directly from the 171 women groups on their socio-economic characteristics, activities they performed in the production and processing of cassava and support systems available for cassava businesses. Further primary data collected from the women included output of cassava and gari produced, total variable cost incurred and problems faced by the women in cassava production and processing. Additional primary data was also collected on support services offered by Business Advisory Centre of the Central Tongu District Assembly, NGOs (Cassava Adding Value for Africa) and progressive Youth and Community Development, Crop Research Institute, Kumasi and Central Tongu Directorate of food and Agriculture.

Secondary data was collected from Central Tongu Directorate of Food and Agriculture on the list of nine women groups in cassava production and processing; library and the internet also provided some useful information for the study including data on performance of cassava among other crops in Ghana.

3.9 Unit of Observation and Unit of Analysis

The unit of analysis can be simply defined as the entity that is being analysed in a scientific research (Tainton, 1990). The unit of analysis may be an organization, an individual, a group; and anything at all can be the unit of analysis ((Tainton, 1990). According to Tainton, the unit of analysis is determined by the research question and,

is more closely related to the data analysis method. Applying Tainton's exposé in relation to the study, the effects of the women's socio-economic characteristics on cassava production and processing, activities performed by the women, possible support systems available, profitability or otherwise of cassava production and processing and the problems that women in cassava production and processing face in the district constituted the units of analysis.

Unit of observation on the other hand is defined as the entity on which measurements are obtained (Tainton, 1990). The unit of observation is therefore the provider of information in a study. The unit of observation represents the objects that are observed and about which information is systematically collected and generalizations made based on an analysis. All the individual women selected from within the nine women groups from across the district constituted the unit of observation.

3.10 Pilot Testing

Kasunic (2005) defines pilot testing as the simulation of survey implementation that is carried out on small scale with members of a target population and it is conducted to expose problems or weaknesses in the questions, questionnaire layout, process and technology (if a web-based questionnaire is used). Pilot Survey was carried out for the purpose of ensuring reliability and validity of data. Upon constructing the questionnaires, the researcher had to pilot the questionnaire with a small sample, as suggested by Kelly (1998) in AL-Dehailan (2007). Pilot testing became necessary to evaluate questions to determine if the right questions were asked, if the questions were understandable and if the order of questions were logical and if there were opened to multiple interpretations (Kasunic, 2005). The questionnaires were

administered to 45 randomly selected women within Amegakofe Newlife Group to check the relevance and clarity of the questions in the actual fieldwork and any observation that demanded a review to some parts of the study including the research questions. This group according to the Central Tongu Directorate of Food and Agriculture was the best performing group, hence its selection for the pilot testing.

3.11 Data Processing and Analytical Tools

The data collected was edited to ensure accuracy of the responses and the responses coded. Coding became imperative for the purpose of classifying responses to questions into meaningful categories or value labeling to make way for the use of Statistical Product and Service Solutions version 16.0 to analyse the responses to the survey questionnaires. The essence of the editing was to allow for detection and removal of any possible errors or reduce the errors in the responses to minimum. SPSS data analysis techniques were utilized in the study for both primary and secondary data that were collected in order to generate parameter estimates for statistical decision making based on the data collected using survey questionnaires.

The application of statistical techniques involves analysing data and making decisions or inferences based purely on data collected about any phenomenon of interest. Descriptive statistical tools such as frequency distribution, percentages and inferential statistics such as multiple linear regressions models were employed. Multiple linear regressions model was employed to analyse the effects of the socio-economic characteristics such as age, educational status, marital status, income status, family size and farming experience on output of cassava produced in the district.

In analysing how the above six variables relate to women's contribution to LED via production and processing of cassava, the linear function applied by Nandi et al., (2011) in determining the coefficients of the variables was adopted yielding a regression model as :

$$\text{Cassava Output}(Y) = f(X_1, X_2, X_3, X_4, X_5, X_6, U) \dots$$

X_1 = Age

X_2 = Educational Level.

X_3 = Marital Status

X_4 = Family size.

X_5 = Annual Income.

X_6 = Farming Experience (in years).

U = Error Term.

Rendering the model in linear form yields: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + U$. where β_0 is a constant, $\beta_1 - \beta_6$ are the estimated coefficients and $X_1 - X_6$ are as already defined above. The estimated partial regression coefficients $\beta_1 - \beta_6$ measure the effects of a unit change in $X_1 - X_6$ respectively. Thus, β_1 measures the effect of X_1 on Y holding X_2 constant and this is done by partially differentiating Y with respect to X_1 . SSPS was used to generate the coefficients, $\beta_1 - \beta_6$ and the constant term, β_0 for the analysis.

Gross Margin (GM) and profitability ratio (using Benefit Cost Ratio) analysis were the most critical analytical tools used to assess the profitability or otherwise of cassava businesses in the district. GM is one measure of profitability that is a useful tool for cash flow planning and determining the relative profitability of farm enterprises (Rural Solutions, 2012). Thus, GM profit is the difference between the

annual Gross Income (GI) for an enterprise and the variable costs directly associated with the enterprise. According to Odoemenem and Otanwa (2011), GM is applicable where fixed capital is a negligible portion of the farming enterprise. Furthermore, as cited by Olukosi and Erhabor (2005) in Odoemenem and Otanwa (2011), GM is defined as the difference between the Gross farm Income (GI) and the Total Variable Cost (TVC). Thus, $GM = GI - TVC$.

In contributing to the assessment of profitability of farm enterprises, Nandin et al., (2011) postulate that the difference between Total Revenue (TR) and Total Variable Cost (TVC) makes up the GM and it evaluates the gross profitability of a given enterprise. The profitability ratio, benefit-cost ratio (BCR) is also given as = Gross Benefit/Total Cost (Nandi et al., 2011). On the fixed cost (overhead), Rural Solutions (2012) also suggests that in constructing GMs, fixed costs are ignored, as it is considered that they will be incurred regardless of the level of the enterprise undertaken. Table 3.2 depicts the areas and specific applicable analytical tools.

Table 3.2: The Specific Application of Statistical Analytical Tools

S/N	Area of Application	Kind of Statistical Tools Required
1	Effects of women's socio-economic characteristics on LED via cassava production and processing.	Descriptive statistics: Frequency Distribution, Percentages and multiple linear regressions model.
2	Activities performed by women in cassava production and processing.	Descriptive statistics: Frequency Distribution and Percentages.
3	Support systems available for women in cassava production and processing.	Descriptive statistics: Frequency Distribution and Percentages.
4	Profitability of cassava production and processing as economic activities.	Gross Margin and Benefit- Cost Ratio (BCR).
5	Problems women in cassava production and processing face.	Descriptive statistics: Frequency Distribution and Percentages.

Source: Central Tongu Directorate of Food and Agriculture, August, 2013

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter focused on the major research findings from the data collected on the women's contribution to local economic development via cassava production and processing in the Central Tongu District. The findings were based on the five research questions for the study as discussed below.

4.2 Socio-economic Characteristics of Respondents

This section covers the analysis of the socio-economic characteristics of the 171 women cassava producers and processors sampled for the study. Six socio-economic characteristics namely; age, marital status, educational level attained, family size (number of children), farming experience (number of years spent in farming) and income status were captured. The first specific objective was carved around the socio-economic characteristics in terms of assessing their effects on the output of cassava production and processing in the Central Tongu District.

4.2.1 Respondents' Age

Only 38 Percent of the cassava producers and processors fell within the age group 31-40 as contained in Table 4.1. About 95.3 percentage (cumulative) of the women were part of the economically active group and all things being equal, they have more working years to contribute more to local economic development of the district.

Table 4.1: Age of Respondents

Age (Years)	Frequency	Percentage	Cumulative Percentage
10-20	9	5.3	5.3
21-30	46	26.9	32.2
31-40	65	38.0	70.2
41-50	33	19.3	89.5
51-60	10	5.8	95.3
61-70	8	4.7	100
Total	171	100.0	

Source: Field Survey, August, 2013

4.2.2 Marital Status

The data on the marital status indicated that 64.9 percent of the women studied were married and 14.6 percent single as duly demonstrated in Table 4.2.

Table 4.2: Marital Status of Respondents

Status	Frequency	Percentage
Married	111	64.9
Single	25	14.6
Divorced	11	6.4
Widowed	20	11.7
Separated	4	2.3
Total	171	100.0

Source: Field Survey, August, 2013

4.2.3 Educational Level Attained

Education attainment is crucial to the analysis to ascertain its effect on local economic development via cassava production and processing. A detailed analysis of the educational level attained by the women showed that educational attainment cuts across basic, second cycle, tertiary, non-formal with a few not tasting any formalized form of education. The data revealed that 69.6 percent of the women had attained basic education level with 15.8 percent attaining no level of education as captured in Table 4.3. This by implication suggests that agricultural activities have remained the main employment source for the less educated and that more specifically the highly

educated class shun farming jobs. This development could negatively affect the agricultural sector of the district and consequently the local economy since the highly educated class of society who would have used trained knowledge and skills are not attracted to the sector.

Table 4.3: Educational Attainment of Respondents

Level	Frequency	Percentage
Basic Education	119	69.9
Second Cycle	10	5.8
Tertiary	6	3.5
Non Formal	9	5.3
None	27	15.8
Total	171	100.0

Source: Field Survey, August, 2013

4.2.4 Family Size

The responses received with respect to the number of children revealed that 31.6 percent of the women had a family size of either 5 or 6 as clearly shown by the descriptive statistics in Table 4.4. This suggests that even though income of food crop farmers is relatively low due to absence of guaranteed prices, they are still faced with the burden of more children to take care of. This does not however rule out the fact that children constitute source of farmhands to parents in agricultural production. This family size in the district is very close to the national household figure of about 8 for the rural poor as captured by the GLSS 5 of 2008.

Table 4.4: Family Size of Respondents

Children	Frequency	Percentage
1-2	38	22.2
3-4	40	23.4
5-6	54	31.6
7-8	19	11.1
9+	18	10.5
No Children	2	1.2
Total	171	100.0

Source: Field Survey, August, 2013

4.2.5 Average Annual Income of Farmers

Empirical data from the field showed that 36.8 percent, of the women fell within the annual income group of, GH¢2,000.00-2,999.00, as contained in Table 4.5. A careful examination of the data revealed also that on cumulative basis, 73.1 percent of the women earned less than GH¢3,000.00 from cassava production and processing.

Table 4.5: Average Annual Income

Income Level	Frequency	Percentage
Less than 2,000.00	62	36.3
2,000.00-2,999.00	63	36.8
3,000.00-3,999.00	36	21.1
4,000.00-4,999.00	9	5.3
7,000.00-7,999.00	1	0.6
Total	171	100.0

Source: Field Survey, August, 2013

4.2.6 Years Spent in Cassava Production and Processing

Field observations revealed that 48.5 percent of the women spent 11-20 years in cassava production as depicted in Table 4.6. Though this observation did not disclose any information about the age group of the women, it could suggest that most of them were likely to be located within the active year group of the labour force of the district and in effect could with available support system, push forward the local economic development agenda of the district.

Table 4.6: Years Spent in Farming (Farming Experience)

Years	Frequency	Percentage
1-10	49	28.7
11-20	83	48.5
21-30	30	17.5
31-40	9	5.3
Total	171	100.0

Source: Field Survey, August, 2013

4.3 Assessing the Effects of Women’s Socio-economic on LED

As part of the methodology, multiple linear regressions model was set to analyse the effects of the social and economic characteristics of the women on LED via cassava production and processing. The model as already set out and defined in Chapter Three of the study is as follows:

$$(Y_{CP}) = f(X_1, X_2, X_3, X_4, X_5, X_6, U) \dots \dots \dots (1)$$

Y_{CP} = Output of cassava and any of its processed products.

X_1 = Age

X_2 = Educational Level.

X_3 = Marital Status

X_4 = Family Size.

X_5 = Income Level

X_6 = Number of Years Spent in Cassava production and Processing and U = Error Term. A cursory check of the scatterplot(Appendix 8) of the data set indicates that a non-linear relationship exists between the dependent and the independent variables hence this has necessitated taking the natural $\log(e)$ of both sides and this therefore renders the above relation as $\ln(Y_{CP}) = \ln(\beta_0) + \beta_1.\ln(X_1) + \beta_2.\ln(X_2) + \beta_3.\ln(X_3) + \beta_4.\ln(X_4) + \beta_5.\ln(X_5) + \beta_6.\ln(X_6) + \ln(U)$. The results were as shown in Table 4.7.

Table 4.7: Coefficients of the Multiple Linear Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.331**	0.258		12.905	0.000
	In(Age of Farmers)	-0.053	0.080	-0.066**	0-.666	0.507
	In(Educational Level)	0.103	0.050	0.170**	2.051	0.042*
	In(Marital Status)	-0.082	0.073	-0.101**	-1.126	0.262
	In(Family Size)	0.032	0.060	0.045**	0.536	0.592
	In (Annual Income)	-0.158	0.085	-0.146**	-1.865	0.054*
	In(Farming Experience)	-0.067	0.103	-0.059**	-0.652	0.515

Source: Field Survey, August, 2013

Dependent Variable: In (Output of cassava produced)

** : Estimated coefficients (β_1 - β_6) of the regression equation

* : Significant

In the analysis, it has clearly emerged that there exists a relationship between the dependent and the independent variables as shown by the regression coefficient in Table 4.8. It was observed further that education and family size were significant since they had a p-value ≤ 0.05 . Thus, educational status and family size had positive effects on local economic development via cassava production and processing in the Central Tongu District. The remaining four socio-economic characteristics namely, marital status, age, income level and farming experience on the other hand were not significant since the significant values exceeded the conventional p-value ≤ 0.05 .

The coefficient of determination (R^2) of 0.063 of the multiple regressions model indicated that only about 6.3 percent of the variation in the output of cassava production could be explained by the predictors or the independent variables as could be read in the model summary in Table 4.8. The low coefficient of determination of 0.063 of the multiple linear regressions model further corroborates that indeed the

independent variables did not adequately explain cassava production output in the Central Tongu District. Thus, that any regression line constructed based on the model could not well approximate the real data points.

The adjusted R^2 in the model is a modification of R^2 which adjusts for the number of explanatory terms in the model. As per the model, the adjusted R^2 of 0.028 means that only 2.8 percent of output of cassava produced since adjusted R^2 takes into account the number of variables in the model and the number of observations the model is based on. The adjusted R^2 in this case has provided further information that the socio-economic variables could explain very little proportion of the variability in the output of cassava produced in the district. In practice, the R^2 could over-estimate the success of the model when applied to the real life situations as could be observed when the value of R^2 is compared to the value of the adjusted R^2 . The beta values measured in units of standard deviation provide a measure of how strongly each predictor variable influences the criterion or predictor variables as indicated clearly in Table 4.7.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.250	0.063	0.028	0.77515

Source: Field Survey, August, 2013

Predictors: (Constant). Farming Experience, annual income, marital status, family size, educational level, age of farmers.

The Analysis of Variance (ANOVA) in Table 4.9 was also used to test whether or not there exists a linear relationship between the dependent and independent variables. The low 'F' statistic (essentially a ratio of the explained variability to the unexplained variability taking into account the degrees of freedom of 170 in this case) of 1.827 is

indicative of the fact that less of the total variability is accounted for by the model. Thus, in practice, the 'F' and 'Sig' values indicate whether or not the independent variables reliably predict the dependent variable.

In putting all these statistical values aforementioned in perspective, it could be concluded that really there exists some relationship between the independent variables (socio-economic characteristics of the women) and the dependent variable (cassava output in this case). However, the socio-economic variables could not adequately explain women's local economic development efforts using cassava production and processing as a proxy since in all, only two of the variables (education and family) were statistically significant as contained in Tables 4.7.

Table 4.9: ANOVA for the Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.231	6	1.539	1.827	0.097
Residual	138.079	164	0.842		
Total	147.310	170			

Source: Field Survey, August, 2013

- a. Predictors: (Constant), farming experience, annual income, marital status, family size, educational level, age of farmers.
- b. Dependent Variable: Output of cassava produced.

4.4 Activities Performed by Women in Cassava Production and Processing

This constitutes the second specific objective the research sought to achieve. The section captured responses of the 171 women in relation to the various processes leading to both farm and post farm activities including how land is acquired, technology for ploughing the land, who executes farm and post farm activities, production costs, the state in which cassava, is sold and preferred varieties of cassava

grown. Other issues relate to estimated annual output of cassava produced, sources of cassava varieties, and estimated annual output of gari produced by the farmers.

4.4.1 Means of Land Acquisition for Cassava Production

According to the data gathered, 72 percent of the women acquired land by inheritance and the rest through leasing, purchasing and as a gift as captured in Figure 4.1. Thus, access to land by women for farming activities in the district is relatively easy as the inheritance system does not exclude them and this has a positive implication for advancing their course in terms of access to land for farming. Women's access to land which is relatively unhindered could consequently enhance their contribution to the local economic development of the district via the agricultural sector.

Figure 4.1: Means of Land Acquisition



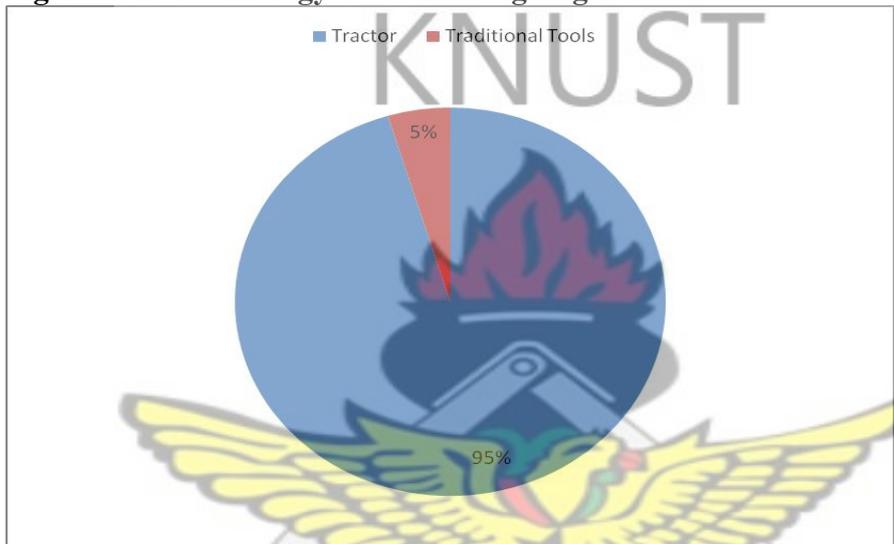
Source: Field Survey, August, 2013

4.4.2 Technology Used in Ploughing Land

The field data revealed that 95 percent of the respondents used tractor in ploughing land and the rest still applied traditional method including hoe and cutlass for the

production of cassava in the Central Tongu District as indicated in Figure 4.2. According to the Central Tongu Directorate of Food and Agriculture, some farmers hired tractor services at a cost ranging between GH¢60.00 and GH¢70.00 themselves while others were supported by NGOs through the block system in which the farmers upon harvesting and sale of products would have to pay back to the donor NGOs.

Figure 4. 2: Technology Used in Ploughing Land

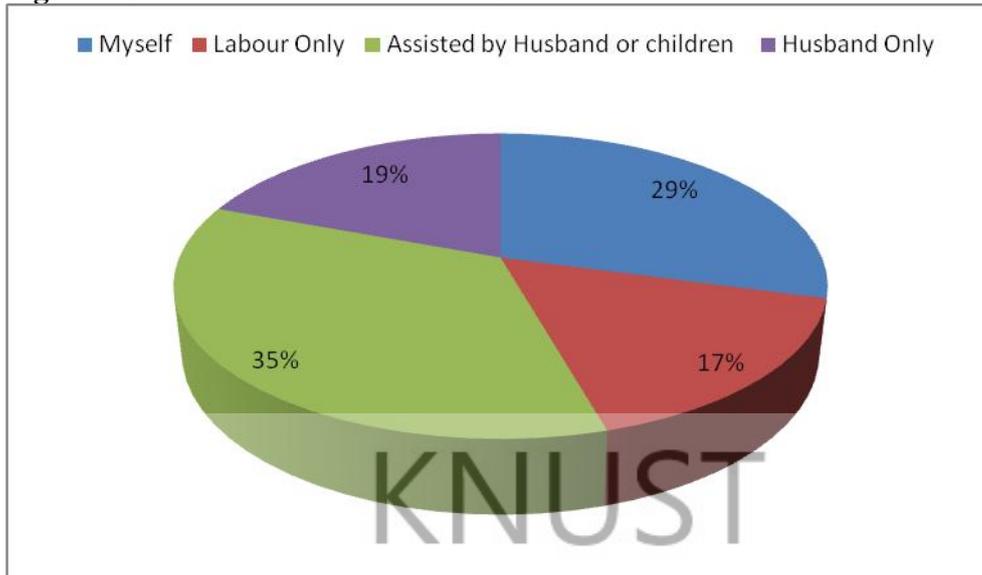


Source: Field Survey, August, 2013

4.4.3 Execution of Farm Activities

Farm activities as used in this context refer to the activities that take place in the field prior to the peeling of cassava at any preferred destination. The identified activities in this regard include land clearing, planting, weeding and maintenance, harvesting and carting cassava to preferred destination for peeling. The respondents were required to indicate who performed the activities as indicated. According to the data, it emerged that 29 percent of the women performed the farm activities themselves, and 35 % of them said that they were performed by them with the assistance of husbands or children. It also came out that 19 percent of the women hired purely labour services in their operations as could be verified in Figure 4.3.

Figure 4.3: Execution Farm Activities



Source: Field Survey, August, 2013

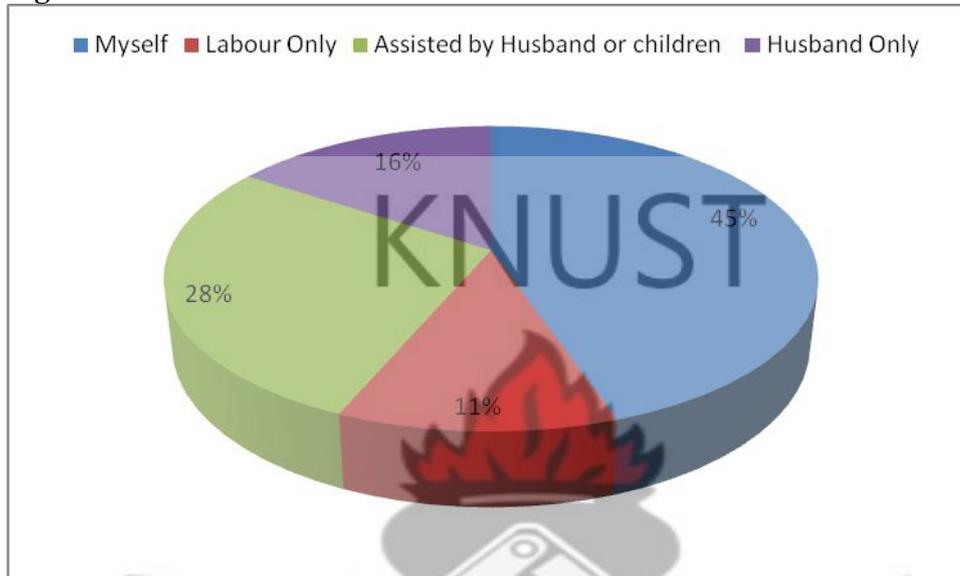
4.4.4 Execution of Post Farm Activities

The post farm activities on the other hand include peeling of the cassava, carting to the grater, pressing (squeezing water from the cassava dough), processing (such as gari as the major product) and sale of product. As cassava matured for harvesting and processing, the level of engagement of several other agents reduces as the activity of women increases. For instance, the number of women who performed farm activities alone increased from 29 percent to 45 percent under the post farm activities and this confirms to a large extent the work of Nweke *et al.*, (2002) as cited in the International Institute of Tropical Agriculture (2005) that women specialise in harvesting, transporting, processing and marketing of cassava. Again, 11 percent of them hired labour services under post farm activity.

In addition to the farm and post farm activities performed by the women, another questionnaire was designed to seek the view of the 10 men within the women groups. The men were of the view that men alone could not bring about local economic

development to the district. Further clarification was sought into the activities they performed and it was observed that they performed several activities such as land clearing, spraying of herbicides, weeding of the farm, and uprooting of cassava.

Figure 4.4: Execution of Post Farm Activities

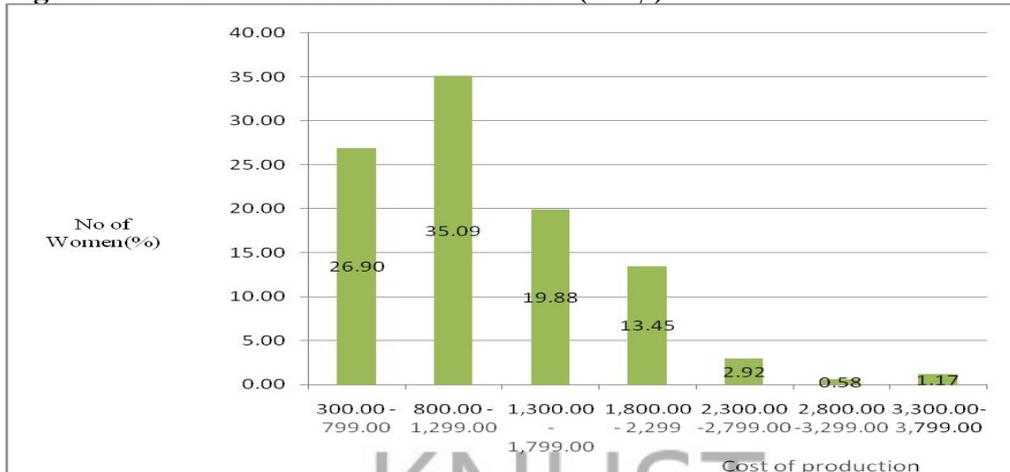


Source: Field Survey, August, 2013

4.4.5 Estimated Cost of Production

The questionnaire also sought from the farmers to estimate the cost of their farming operations. The data clearly showed that about 35 percent out of them spent within the cost range of GH¢800.00 – 1,299.00 as illustrated in Figure 4.5. The cost generally included labour, leasing of the land, buying of stem cuttings on the open market and transport.

Figure 4.5: Estimated Cost of Production (GH¢)

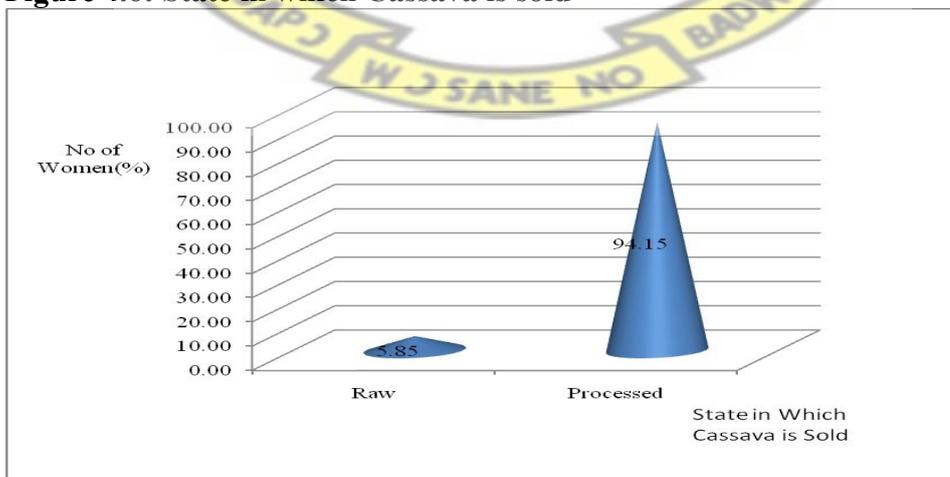


Source: Field Survey, August, 2013

4.4.6 The State in which Cassava is sold

This covered responses on the state in which cassava was sold by the women in the district. As revealed by data collected and analysed, 94.15 percent of the women processed cassava and the rest 5.85 percent sold cassava in its raw state as shown in Figure 4.6. This means that by processing cassava, the women have seen the need to add value to their cassava and this could increase the value of cassava and thereby promote the local economic development of the district since value addition to agricultural products increases their value.

Figure 4.6: State in which Cassava is sold

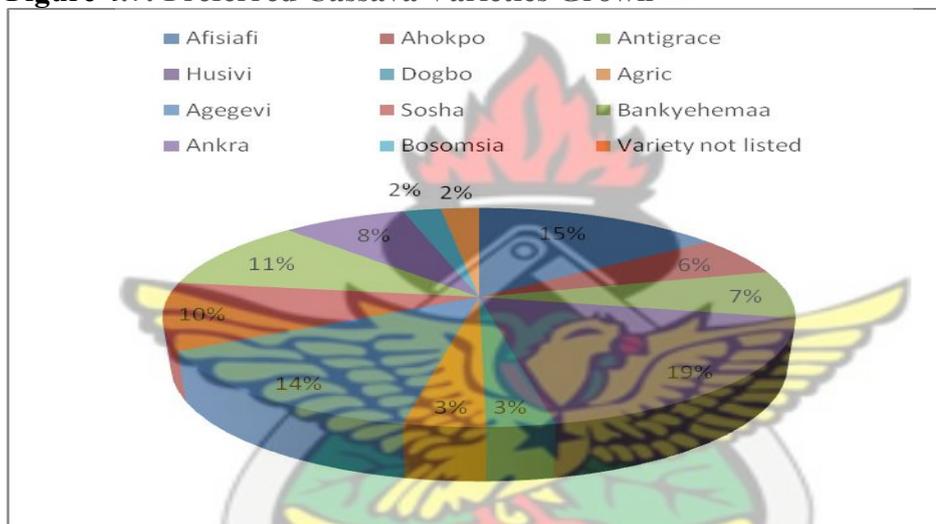


Source: Field Survey, August, 2013

4.4.7 Preferred Cassava Varieties Grown

The empirical data gathered reveals that 11 cassava varieties, Afisiafi, Husivi, Dogbo, Agric, Agegevi, Sosha, Bankyehemaa, Ankra , Bosomsia, Ahokpo, Antigrace and varieties not listed were grown in the district as in Figure 4.7. The dominant varieties grown were Husivi (19%) and Afisiafi (15%). Husivi was popularly preferred by the farmers probably due to its ability to withstand different climatic conditions and the fact that within six months one could harvest to meet their pressing needs.

Figure 4.7: Preferred Cassava Varieties Grown

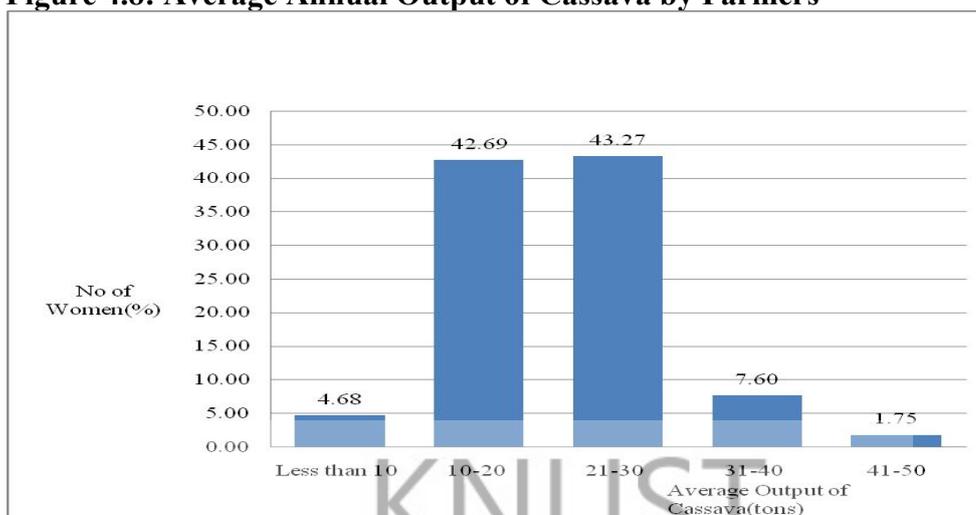


Source: Field Survey, August, 2013

4.4.8 Average Annual Output Level of Cassava Production

The respondents were also requested to provide an estimate of annual output of cassava. Out of the 171 women, 42.69 percent produced within 10-20 tons of cassava and 4.68 percent produced less than 10 tons as illustrated in Figure 4.8. The data in Figure 4.8 seems to have suggested that the 95 percent of the women who used tractor in ploughing their land might have produced between the average output range of 10-20 tons and 21-30 tons of cassava and similarly Husivi and Afisiafi cassava could be the cassava varieties produced as discussed in Figure 4.7.

Figure 4.8: Average Annual Output of Cassava by Farmers



Source: Field Survey, August, 2013

4.4.9 One Major Product Produced

The survey data indicated that 57.9 percent of the farmers processed cassava into gari and 22.8 percent produced cassava dough and konte as revealed in Table 4.10. The 22.8 percent of the farmers producing cassava and konte shows that several farmers have still not added value to the cassava produced and this implies generating relatively low income streams and for that matter low performance of the agricultural sector of the economy of the district. Only 1.2 percent of the farmers produced cassava flour and 5.8 percent produced cassava biscuit.

Table 4.10: One Major Cassava Products Produced

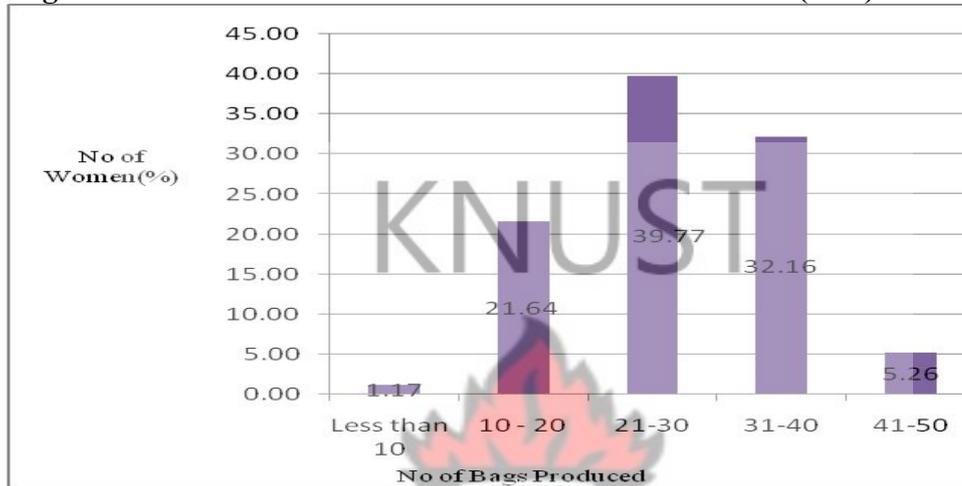
Product	Frequency	Percentage
Gari	99	57.9
Cassava dough and Konte	39	22.8
Biscuit	10	5.8
Flour	2	1.2
Starch	4	2.3
Agbelikaklo	9	5.3
Yakayake	8	4.7
Total	171	100.0

Source: Field Survey, August, 2013

4.4.10 Estimated Annual Amount of Gari Produced (tons)

The data revealed that 39.77 percent produced gari within the range of 21-30 bags and 1.17 percent produced less than 10 bags as indicated in Figure 4.9.

Figure 4.9: Estimated Annual Amount of Gari Produced (tons)



Source: Field Survey, August, 2013

4.5 Support Systems for Women in Cassava Production and Processing

The above forms the third objective for the study. It sought to identify some support systems available for women in cassava production and processing in the Central Tongu District. Several questions were raised to elicit responses from the respondents on support systems (technical or financial) from Central Tongu District Assembly, Central Tongu Directorate of Food and Agriculture and NGOs in agriculture in the district. The strategy of triangulation was adopted by developing different questionnaires which were completed by Crop Research Institute (Kumasi), Business Advisory Centre (BAC) of the Central Tongu District Assembly, NGOs such as Cassava Adding Value to Africa (CAVA); and Progressive Youth and Community Development (PROYCOD); and Central Tongu Directorate of Food and Agriculture.

The Crop Research Institute (CRI) also provided support to cassava farmers such as planting materials, new varieties meant for both human consumption and industrial use free of charge as contained in Table 4.11.

Table 4.11: Improved Cassava Varieties Released by CRI Ghana, Kumasi

S/N	Varieties	Year	Purpose	Maturity Period	How Obtained
1	Afisiafi	1993	Human consumption and industrial use	12-15 months	Free
2	Abasafitaa	1993	Human consumption and industrial use	12 – 15 months	Free
3	Tekbankye	1997	Human consumption and industrial use	12 – 15 months	Free
4	Nkabom	2005	Human consumption and industrial use	12 – 15 months	Free
5	Agbelifia	2005	Human consumption and industrial use	12 – 15 months	Free
6	Dokuduade	2005	Human consumption and industrial use	12 – 15 months	Free
7	Essumbankye	2005	Human consumption and industrial use	12 – 15 months	Free
8	Bankyehema	2005	Human consumption and industrial use	12 – 15 months	Free
9	Ampong	2010	Human consumption and industrial use	12 – 15 months	Free

Source: Crop Research Institute, Kumasi, August, 2013

CAVA also provided capacity building, agrochemical, high yielding varieties and such as Agegevi and Sosha including other services to the farmers free of charge or at a cost through value chain linkages as shown indicated in Table 4.12.

Table 4.12: Support Services Offered by CAVA

S/N	Kind of Support	Year	Access to the Support: Free, at a cost (indicate appropriately)
1	Capacity building	2009-2011	Free(donor sponsored)
2	High yielding variety	2009-2013	Free (donor sponsored)
3	Planting material	2010	Free (donor sponsored)
4	Linkage to market	2010-2013	Free (donor sponsored)
5	Agrochemicals suppliers	2010	At a cost through value chain linkages

Source: CAVA, August, 2013

Central Tongu District Assembly BAC also provided some form of support services including technical training in cassava processing, small business management as shown in Table 4.13.

Table 4.13: Support Offered By Central Tongu District Assembly BAC

S/N	Support Ever Offered	State of Support: On-going, Ended(Indicate)	Access to the Support: Free, at a cost (indicate)
1	Technical training in cassava processing to approved products to standard	On-going	At a cost heavily subsidized; GH¢ 6 – 12 per participant
2	Small business management training in book-keeping, packaging & marketing, time, safety, hygiene & risk management. Training takes 5 – 10 days	On-going	At a cost heavily subsidized; GH¢ 6 – 12 per participant
3	Training in group dynamics- Formation of group, division of labour,	On-going	At a cost heavily subsidized; GH¢ 6 – 12 per participant

Source: BAC, Central Tongu District Assembly, August, 2013

4.5.1 Cassava Varieties from Directorate of Food and Agriculture

As shown by the result in Table 4.14, only 36.8 percent of the farmers received cassava varietal needs from the Central Tongu Directorate of Food Agriculture. The

rest sourced their varietal needs from their previous production, purchasing and obtained fellow farmers free of charge as corroborated by the results in Table 4.14.

Table 4.14: Cassava Varieties from Directorate of Food and Agriculture

Response	Frequency	Percentage
Yes	63	36.8
No	108	63.2
Total	171	100.0

Source: Field Survey, August, 2013

4.5.2 Access to Cassava Varieties

Among the 36.8 percent of the farmers who received their cassava varietal needs from the Central Tongu Directorate of Food and Agriculture, all of them did that free of charge. A further check at the Central Tongu Directorate of Food and Agriculture truly indicated that farmers apart from fertilizer (NPK) that is sold at subsidized price for GH¢51.00 never pay for any service.

4.5.3 One Major Source of Cassava Varieties

Available data in Table 4.15 showed that 83 percent of the farmers depended on their own previous production for cassava varieties for subsequent production and the rest either bought from the open market or obtained it free of charge from other farmers or possibly were part of the 36.8 percent of farmers who obtained cassava varieties from the Central Tongu Directorate of Food and Agriculture.

Table 4.15: Receiving Technical Support from Extension Officers

Response	Frequency	Percentage
Yes	43	25.1
No	128	74.9
Total	171	100.0

Source: Field Survey, August, 2013

4.5.4 Frequency of Extension Service

This question was to assess the frequency of extension service delivery that the farmers received. Out of the 171 farmers, 43 representing 25.7 percent (cumulative) who claimed to have enjoyed extension services were to choose from among three options, weekly, monthly and annually to indicate the frequency of the extension service delivery. The response showed that 21.6 percent of the farmers benefited from extension service on weekly basis and 4.1 percent monthly. The figure 999 in the table is the missing value in Table 4.16 indicates that 74.3 percent of the farmers did not either enjoy extension service or did not want to disclose it.

Table 4.16: Frequency of Extension Service

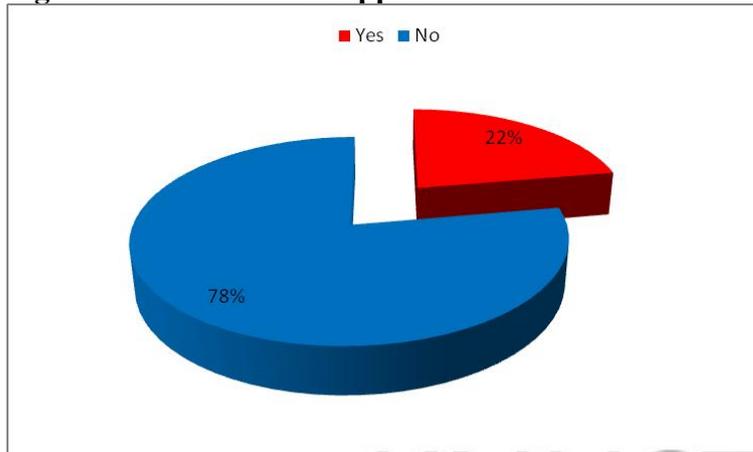
Visit Made	Frequency	Percentage
Weekly	37	21.6
Monthly	6	4.1
999(Missing value)	128	74.3
Total	171	100.0

Source: Field Survey, August, 2013

4.5.5 Technical Support from NGOs

The women in cassava production and processing who received or did not receive some technical support service from two NGOs, CAVA and PROYCOD were also assessed. The result showed that only 22 percent of the farmers benefited from technical supports offered by NGOs, CAVA and PROYCOD as in Figure 4.10. The situation where the Central Tongu Directorate of Food and Agriculture could not effectively deliver technical needs to the farmers due to financial constrains, coupled with the inability of agricultural NGOs in the district to do same could reduce the contributions that women make to the local economic development of the district.

Figure 4.10: Technical Support from NGOs

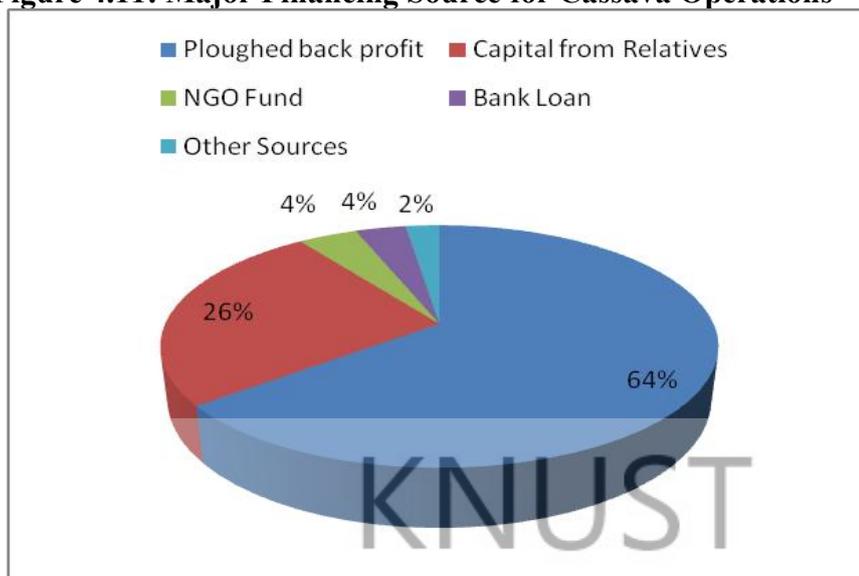


Source: Field Survey, August, 2013

4.5.6 Major Financing Source for Cassava Operations

The farmers were required to identify one major financing source for their operations and it was revealed in Figure 4.11 that majority of them, 64 percent financed their cassava farming and processing from ploughed back profit and 2 percent from bank loan. Ploughed back profit thus, constituted the major source of finance for most of the women cassava farmer groups in the district and this might probably be due to the inability of the farmers to do savings, lack collateral for loans or high cost of credit charged by banks. The women cassava farmers might not contribute substantially to local economic development of the district if ploughed back profit would be the major financing source given that cassava production itself is subject to the vagaries of the weather.

Figure 4.11: Major Financing Source for Cassava Operations



Source: Field Survey, August, 2013

4.6 Profitability Assessment of Cassava Production and Processing

This forms the fourth specific objective for this study. The crux of this objective was to assess the profitability or otherwise of cassava production and processing as economic activities engaged in by women in the district. This was informed by fact that as people engage in any form of economic activity towards local economic development, that activity itself must be profitable in the first place otherwise it is not worth pursuing.

4.6.1 Cassava Production as Main Employment Source

Cassava production was the main source of agricultural employment for 91.8 percent of the farmers studied as could be seen in Table 4.17.

Table 4.17: Cassava Production as Main Employment Source

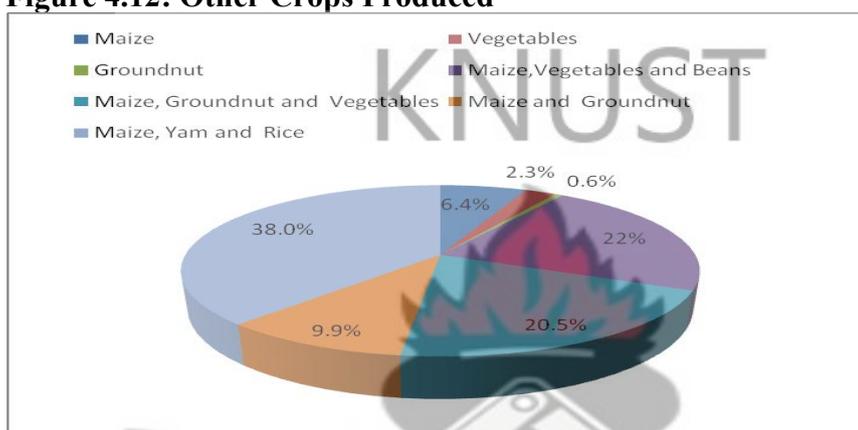
Response	Frequency	Percentage
Yes	157	91.8
No	14	8.2
Total	171	100.0

Source: Field Survey, August, 2013

4.6.2 List of Other Crops Produced

Apart from cassava production all of the farmers also produced other food crops such as maize, vegetables and groundnut. It was discovered that 38 percent of them produced maize only as in Figure 4.12. Again, 20.5 percent produced the combination of maize, groundnut and vegetables.

Figure 4.12: Other Crops Produced



Source: Field Survey, August, 2013

4.6.3 Record of Cassava Operations

The farmers were also asked if they kept record of their operations. The result as provided in Table 4.18 clearly indicated that only 34.5 percent of them kept record of their farming activities. Record keeping has always been problems to agricultural producers due to illiteracy.

Table 4.18: Record of Cassava Operations

Response	Frequency	Percentage
Yes	59	34.5
No	112	65.5
Total	171	100.0

Source: Field Survey, August, 2013

4.6.4 Quantitative Assessment of the Profitability of Cassava Operations

By way of follow up to the question on record keeping, the respondents were asked to express their judgment with regard to profitability or otherwise of cassava production and processing in the district from the options 'Yes' or 'No'. They all indicated that cassava production and processing were profitable economic activities in the Central Tongu District. The accuracy of the judgment was questionable since by the data, only 34.5 percent kept record and it could be difficult to tell how the profitability assessment was done by the farmers. The respondents were asked to estimate the total variable cost for both farm and post farm activities and the gross margin was employed as the analytical tool to determine cost and returns to cassava production and processing in the study area. It emerged that 57.9% of the women produced gari, hence using it for the quantitative analysis of the profitability of cassava production and processing.

In the determination of the profitability or otherwise of cassava operations, total variable cost (TVC), total revenue (TR) and total gross margin for all of the 171 farmers studied was calculated as it appears in the gross margin analysis in appendix 1 using the prevailing price of GH¢3.20 in the district. Verifying from the resultant analysis, it could be inferred that cassava production and processing yielded an annual profit of GH¢530,410.00 to the women farmers as contained in Appendix 1. Benefit-Cost Ratio was applied to determine returns to investment per unit of GH¢ as follows. Benefit= 530,410.00, Cost= 129,590.00. Benefit-Cost Ratio= $530,410.00/129,590.00$ =GH¢4.09. The Benefit-Cost Ratio of GH¢4.09 means that for every one GH¢1.00 invested in cassava production and processing, an additional GH¢4.09 was realized.

4.7 Problems Faced by the Women in Cassava Production and Processing

This section constitutes the fifth and the last objective for the study. The respondents were asked if they faced any problem in their operations and all of them responded in the affirmative. A follow up question was carved around nine problem variables including land acquisition, access to capital, poor rainfall, irregular extension services and no extension service. Others were unstable demand for product, fluctuating price, pests and diseases, bush fires and activities of rodents. The respondents were asked to select those that applied to them and also indicate which agent(s) could best solve them. The farmers were to select from among the agents, government, NGO and farmer; government and NGO; government and farmer; NGO and the farmer including 'none'. The purpose of inserting the 'none' option, was to indicate that even though the farmer might have agreed that a particular variable was a problem she did not think such could be solved by the listed agents.

4.7.1 Agent to Solve Land Acquisition Problem

All of the farmers were of the opinion that they faced certain problems in their operations. As indicated by the responses in Table 4.19 about 49.7 percent (cumulative) of them saw land acquisition as problems but they had varied views as to the agent(s) who could best provide solution. In all, 35.1 percent thought that the farmer could best solve the land acquisition problem and 3.5 percent held the view that none of the agents listed could provide solution as indicated in Table 4.19. The Figure 999 represented the missing value suggesting that land acquisition as a problem was not applicable to 50.3 percent of the women.

Table 4.19: Agent to Solve Land Acquisition Problem Best

Agent	Frequency	Percentage	Cumulative Percent
Government	10	5.8	5.8
Farmer	60	35.1	40.9
Government and NGO	9	5.3	46.2
None	6	3.5	49.7
999(Missing Value)	86	50.3	100.0
Total	171	100.0	

Source: Field Survey, August, 2013

4.7.2 Agent to Best Solve Problem of Access to Capital

In relation to access to capital, 85.4 percent (cumulative) of the respondents held the view that access to capital was a problem but expressed varied opinions on the agent to provide the needed solution as conveyed by Table 4.20. The data indicated that 40.9 percent of the farmers were of the view that it was the responsibility of government to provide the needed solution and 25.7 percent claimed it was the combined effort of both government and NGOs. The missing value, 999 in this case again showed that 14.6 percent of the farmers did not view access to capital as a problem to their operations.

Table 4.20: Agent to Solve Problem of Inadequate Capital Best

Agent	Frequency	Percentage	Cumulative Percent
Government	70	40.9	40.9
NGO	9	5.3	46.2
Farmer	19	11.1	57.3
Government and NGO	44	25.7	83.0
None	4	2.3	85.4
999(Missing Value)	25	14.6	100.0
Total	171	100.0	

Source: Field Survey, August, 2013

4.7.3 Agent to Solve Poor Rainfall Problem Best

The women responded to this question, expressing varied views. For instance 17.5 percent thought that government could provide the solution and 17.5 percent claimed both the government and NGOs. In addition, 48.5 percent were of the view that no agent had the solution as seen in Table 4.21.

Table 4.21: Agent to Solve Poor Rainfall Problem Best

Agent	Frequency	Percentage
Government	30	17.5
NGO	6	3.5
Farmer	1	0.6
Government and NGO	30	17.5
Government and Farmer	2	1.2
None	83	48.5
Government, NGO and Farmer	19	11.1
Total	171	100.0

Source: Field Survey, August, 2013

4.7.4 Agent to Solve Irregular Extension Service Problem Best

In responding to the problem involving irregular extension service delivery, 98.8 percent (in cumulative terms) of the farmers who saw the variable as problem held varied views on the provision of solution. For instance 60.8 percent of them held the view that government was the agent to provide the necessary solution best as depicted in Table 4.22.

Table 4.22: Agent to Solve Irregular Extension Service Problem Best

Agent	Frequency	Percentage
Government	104	60.8
NGO	44	25.7
Farmer	2	1.2
Government and NGO	19	11.1
None	2	1.2
Total	171	100.0

Source: Field Survey, August, 2013

4.7.5 Agent to Solve Problem of Unstable Demand Best

The study also investigated the extent to which unstable demand was gauged as a problem for cassava and its processed products and 97.7 percent (cumulative) of the farmers saw it as a problem but as usual expressed different opinions on who could provide the solution as in Table 4.23. In the response, 71.9 percent thought the government was the best to provide the solution and 15.2 percent thought the farmer should.

Table 4.23: Agent to Solve Problem of Unstable Demand Best

Agent	Frequency	Percentage	Cumulative Percentage
Government	123	71.9	71.9
NGO	5	2.9	74.9
Farmer	26	15.2	90.1
Government and NGO	6	3.5	93.6
Government and Farmer	7	4.1	97.7
None	4	2.3	100.0
Total	171	100.0	

Source: Field Survey, August, 2013

4.7.6 Agent to Best Solve Fluctuating Price Problem

Fluctuating price as a problem variable was also investigated. According to the result in Table in 4.24, the majority of the farmers (86.5 percent) held the view that it was the responsibility of the government to solve the problem involving unstable prices.

Table 4.24: Agent to Solve Fluctuating Price Problems Best

Agent	Frequency	Percentage
Government	148	86.5
NGO	6	3.5
Farmer	4	2.3
Government and NGO	1	.6
Government and Farmer	3	1.8
NGO and Farmer	1	.6
None	6	3.5
Government, NGO and Farmer	2	1.2
Total	171	100.0

Source: Field Survey, August, 2013

4.7.7 Agents to Solve Pests and Diseases Problems Best

Pests and diseases have been part of the numerous problems faced by farmers. The study therefore posed this question to seek the opinion of farmers in relation to the problem. As displayed in Table 4.25, it came out clearly that 51.5 percent of the farmers held the view that it was their responsibility to solve problem involving pests and diseases and 39.2 percent thought that it was the responsibility of government.

Table 4.25: Agents to Solve Pests and Diseases Problems Best

Agent	Frequency	Percentage
Government	67	39.2
NGO	4	2.3
Farmer	88	51.5
Government and NGO	2	1.2
Government and Farmer	1	.6
NGO and Farmer	2	1.2
None	7	4.1
Total	171	100.0

Source: Field Survey, August, 2013

4.7.8 Agents to Best Solve Problems of Bushfires

The problem of bush fires also showed up in the collection of data for the study. As revealed in Table 4.26, the majority of the women (50.3%) indicated that providing solution to bushfires was their responsibility and 21.6 saw it as joint solution for both the farmer and government.

Table 4.26: Agents to Solve Problems of Bushfires Best

Agent	Frequency	Percentage
Government	30	17.5
NGO	2	1.2
Farmer	86	50.3
Government and NGO	5	2.9
Government and Farmer	37	21.6
NGO and Farmer	4	2.3
None	7	4.1
Total	171	100.0

Source: Field Survey, August, 2013

4.7.9 Agents to Solve Problems of the Activities of Rodents Best

The farmers further responded to a question on the activities of rodents in relation to cassava production. The analysis showed that 48.5 percent of the farmers considered the activities of rodents as a problem that no agent could solve as depicted in Table 4.27. The data revealed further that 28.1 percent and 18.1 percent held the view that the farmers and the government respectively could provide solution to deal with the activities of rodents.

Table 4.27: Agents to Solve Problems of the Activities of Rodents Best

Agent	Frequency	Percentage
Government	31	18.1
NGO	1	0.6
Farmer	48	28.1
Government and NGO	2	1.2
Government and Farmer	1	0.6
NGO and Farmer	1	0.6
None	83	48.5
Government, NGO and Farmer	4	2.3
Total	171	100.0

Source: Field Survey, August, 2013

4.8 Implications of Women Cassava Production and Processing for LED

Located in every rational economic agent or individual are abilities or potentials that engender taking socio-economic initiatives for sustainable livelihoods which serves as a fulcrum for Local Economic Development in all societies. What society might have not learnt or noticed faithfully enough is the industry and the energies in the woman which largely remain untapped for the benefit of all in generality. Careful examination of the analysis relating to cassava production and processing activities performed by the women in the Central Tongu District reveals streams of associated socio-economic benefits that serve as the engine for LED.

The analysis so far brought to the fore, all the activities that cassava producer and processor women performed in their cassava businesses which were classified as farm and post farm activities. The ownership and management of cassava and its related businesses and activities by the women could best be termed as having the “job multiplier effects” to generate several cassava related jobs. In the first place, cassava production and processing itself offer employment to the women themselves since by these operations the women derive their livelihoods in a relatively sustainable manner.

In addition to above, cassava production and processing activities have some spillover effects that flow down to all manner of persons who are engaged by the women at the various stages of cassava production and processing activities. For instance, from the analysis in Figure 4.3, it emerged that 17 % and 10% of the women engaged labour services under the farm and post farm activities respectively. The women offer agricultural jobs to who worked directly on the farms or truck pushers and tricycle motor riders who transport cassava from the farms to the peeling centres

and to the graters and back. Products, Processed or raw materials are also transported to the market centres by drivers, tricycle motor riders and truck pushers and this offer them income for their livelihood.

Furthermore, cassava production and processing activities of the women provide job opportunities for the grater operators and by this they also earned income for their livelihoods. Cassava operations also create job opportunities for artisans who manufacture cassava graters and improved pressing machines. Processed cassava products such as the bread and biscuit, and gari also provide to other 'wayside' sellers jobs. Thus, through cassava operations, women in the district contribute their quota to solving unemployment problems which have become a "social albatross" hanging around the necks of developing countries such as Ghana by creating jobs for people.

Not only do the women in cassava production and processing create jobs for people, but also meet the cassava food needs of the Central Tongu District. As recorded in Table 4.12 cassava production and processing generated products such as gari, cassava dough used for (cooking banku), biscuits, agbelikaklo, kokonte and yakayake. Apart from the above products, cassava producers and processors produce other food crops such as maize, groundnut and vegetables as observed in Figure 4.12.

Again, cassava producers and processors serve as raw material source for some industries. For instance, cassava is now used by Guinness Ghana Limited in the production of beer. According to the Central Tongu Directorate of Food and Agriculture, fresh cassava is carted from the district by Guinness Ghana Limited for beer production. Cassava operations serve as one of the sources of revenue to the

Central Tongu District Assembly. Market tolls are collected by the Assembly from the women who sell their products at Mafi-Kumase Market (the biggest market centre in the district) and this by implication will enhance their Internally Generated Fund (IGF) to enable it pursue its socio-economic agenda as a planning authority.

In conclusion, the contribution that women in the Central Tongu District make to LED cannot be in doubt. The various employment avenues provide income to labour service providers, foodstuffs generated by cassava increase food output to the local economy and these variables all together not only improve income and output to the Central Tongu District alone but Ghana's GDP.



CHAPTER FIVE

MAJOR FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

In the previous chapter, responses to the 30 questions raised on 38 variables under five broad headings covering the research questions in the survey were all analysed. This section constitutes the last chapter for the study and it presents the major findings as were set out in the analysis. It covers five broad areas in relation to the research questions including the socio-economic characteristics of respondents and their effects on local economic development, various activities performed by women and support systems available for local economic development. Others include the quantitative assessment of the profitability of cassava production and processing and problems women face in local economic development in the Central Tongu District.

5.2 Major Findings

The section covers major findings revealed by the analysis of the survey data as highlighted below.

5.2.1 Effects Women's Socio-economic Characteristics on Cassava Production and Processing

Critical analysis of the responses showed that among the women groups who engaged in cassava production and processing in Central Tongu District, 38 percent aged 31–40. Thus, the women form part of the active labour force in the district. Also most of the women were married as the analysis revealed that 65 percent of them were married and only 16 percent did not have a formal education. The analysis again

showed that most of them gave birth to about 5 or 6 children. The study also revealed that 37 percent of the women fell within an income range of GH¢2,000.00-2,999.00. Access to land for agricultural production was not difficult for the women as 72 percent of them acquired land by inheritance and in addition, 95 percent of them had access to tractor services in the district. Majority (95.15 percent) of them also added value to cassava produced; 57.7 percent produced gari, 22.8 percent produced cassava dough and konte and 5.8 percent produced cassava biscuits.

The multiple linear regressions analysis revealed that among the socio-economic characteristics of the women, educational status and family size had some significant effects on cassava output produced. This suggests for instance, that a literate farmer could use the acquired knowledge to enhance cassava production and could also use their children as farm hands and this could reduce labour service cost.

5.2.2 Activities Performed by Women in Cassava Production and Processing

The study revealed that the majority of the women (72%) acquire land through inheritance and 95 percent of them also used tractor in ploughing land for the production of cassava in the district. It also became clear that 39 percent of the women spent within the cost range of GH¢800.00 – 1,299.00 for the 2012 farming season on the production and processing of cassava.

The empirical data gathered and analysed also revealed that 11 varieties of cassava were grown by the women; 19 percent preferred Husivi, 15 percent Afisiafi and 14 percent Agegevi. The majority (94.2%) of the women who produced cassava for market processed the produce and the rest 5.8 percent sold cassava in the raw state. On the output of cassava produced by the women groups, it came to light that 42.7

percent of them produced within an output range of 10-20 tons of cassava and produced gari which was the major product (57.9%) within an output range of 10-20 bags each containing 50 olonka of gari.

The analysis also showed that 29 percent of the women in the cassava producer and processor groups directly undertook farm activities and 35 percent were assisted by husband or children. The activities performed by the women in the production and processing of cassava however increased from 29 percent under the farm activities to 45 percent under the post farm activities confirming the study done by Ogunleye et al., (2008) that women predominate the processing and marketing of cassava.

5.2.3 Support Systems for Women in Cassava Production and Processing

The research findings revealed the existence of some available support systems for the women in the cassava producer and processor groups in the Central Tongu District. For instance 37 percent of the farmers confirmed that the Central Tongu Directorate of Food and Agriculture ever met their cassava varietal needs free of charge. For the purposes of continuous production, the majority (83%) of the farmers used stem cuttings from their previous production.

The farmers also enjoyed technical supports from the extension service unit of the Central Tongu Directorate of Food and Agriculture and NGOs called PROYCOD and CAVA. According to the analysis, 25 percent of the farmers received extension services either on weekly or monthly basis from the Central Tongu Directorate of Food and Agriculture. It also became very clear that, though extension services delivery play a key role in the provision of technical support for cassava farmers, 74

percentage the members within the women groups did not have access to extension services delivery in the Central Tongu District. It was revealed further that only 22 percent of the women received technical and 4 Percent received finances from NGOs in support of their operations. It also emerged 64 percent and 26 percent of the farmers depended on ploughed-back profit and relatives respectively for financing cassava production and processing in the district.

5.2.4 Profitability Assessment of Cassava Production and Processing

The empirical data revealed that cassava production and processing offered 92 percent of agricultural employment to the members of the women groups in the Central Tongu District. Despite the fact that cassava production and processing offered the largest agricultural employment, all of the women engaged in the production of other crops such as maize, vegetables, groundnut; maize; vegetables and beans; maize, groundnut and vegetables; maize and groundnut; and maize, yam and rice.

The research results revealed also that only 35 percent of the farmers kept record of their farming activities but they all however indicated that cassava production and processing were profitable. The application of Gross Margin in the quantitative assessment of the profitability of cassava production and processing for 2012 farming seasons indicated profit of GH¢530,410.00 to the women. Thus, cassava production and processing were actually profitable economic activities with a Benefit-Cost Ratio of GH¢4.09 in the local economic agenda of women cassava producers and processors in the Central Tongu. The Benefit-Cost Ratio of GH¢4.09 implies that for every GH¢1.00 invested, a profit of GH¢4.09 would be realized.

5.2.5 Problems Faced by the Women in Cassava Production and Processing

All the 171 women indicated clearly that they faced problems in their production and processing operations. The problems faced by the women included nine variables including land acquisition, access to capital, poor rainfall, irregular extension service, unstable demand for product, fluctuating price, pests and diseases, bush fires; and activities of rodents. These nine problems were viewed differently since variables viewed as problems for some of the respondents were not for the others.

It was evident that the farmers did not only view the problems differently but also held different views as to who could best provide solution to them. Some of the variables, though were problems were not applicable to some farmers. In the analysis, the majority view was considered as the representative voice or opinion of the entire 171 respondents. The women considered four of the problems including access to capital (41%), irregular extension service (61%), unstable demand (72%) and fluctuating price (87%) as the responsibility of government. Pests and diseases (52%), bush fires (50%) and land acquisition (35%) problems were to be solved by the farmers. It was again observed that 49 percent of the respondents admitted that rainfall and the activities of rodents were problems but the farmers held the view that no one could provide a solution to the problem.

5.3 Recommendations

Local Economic Development is a shared responsibility, men have their role to play and so do women as Adams and Kruppenbach (1987), opine that that there can be no societal transformation without the involvement, support, and leadership of women. This position was corroborated by the men in the women groups that they (men) alone

cannot bring local economic development to the Central Tongu District stressing that men need women to help them. In view of the findings discussed above, the researcher proposed a number of recommendations aimed at enhancing local economic development capacity of women in the Central Tongu District.

5.3.1 Activities Performed By Women in Cassava Production and Processing

The study classified the activities performed by the women cassava producers and processors as farm and post farm activities and operationally defined them as discussed previously. It was observed that 29 percent of the women performed the farm activities all alone and the 17 percent hired labour services and the others indicated that they were done together with the assistance of their husbands or children. At the post farm activity level, 45 percent claimed to have performed the tasks themselves. The stream of benefits that were associated with the activities was discussed as well. These activities generated agricultural job avenues for some members in the district. Through the farm operations of the women, cassava related food needs of the district could be met. The activities of the women again constituted a source of revenue to the Central Tongu District Assembly as well as create source of raw materials for the Guinness Ghana Limited in beer production. Bearing in mind the benefits associated with the cassava business activities of the women, it is recommended that the Central Tongu District through its Business Advisory Centre supports the women with stimulus package to enhance their contribution to Local Economic Development in a sustainable manner. For instance, the chunk of MASLOC credit facilities could be used to champion the course of women in agriculture.

5.3.2 Support Systems for Cassava Production and Processing in the District

The study revealed limited governmental support for women cassava production and processing activities in the Central Tongu District. This development is a worrying one, especially taking into consideration the stream of benefits cassava possesses and the recognition it received from FAO (1998) as a commodity approach to poverty reduction. For instance, out of the 171 women interviewed, 74.3 percent did not have access to extension service delivery.

Farmers need regular provision of technical knowledge and so the Ministry of Food and Agriculture needs to equip the Central Tongu Directorate of Food and Agriculture which is currently bedeviled with inadequate extension staffs, inadequate service funds and broken down motorbikes for extension staff. The consequence of the inadequate extension staff is that extension officer to farmer ratio according to Central Tongu Directorate of Food and Agriculture currently runs over 2000 instead of the ideal national extension officer to farmer ratio of 800. Since it is increasingly becoming a daunting challenge for government to finance activities of extension service staffs due to unavailability of funds, then the farmers should be made to pay little fees for extension services rather than continue with the current status quo where it is free but could not be provided.

In addition, it again emerged that none of the farmers received any governmental finances for their cassava production and processing activities. If the government of Ghana intends to effectively reduce poverty especially in the rural areas then such policies must focus on economic activities of women since they are mostly victims of vulnerability including poverty and they engage in agricultural activities whose prices

are not guaranteed. It is in the light of this that it came as a surprise that from among host of financing sources, not even one of the farmers cited MASLOC as a financing source for women cassava production and processing operations in the Central Tongu District. Cassava, due to its ability to thrive well in most climatic conditions readily meets the security needs of most countries especially in Africa and so the government of Ghana must therefore focus on policies that promotes cassava related businesses by establishing cassava commercialization project fund.

5.3.3 Problems Faced by the Women in Cassava Production and Processing

The study again brought to the limelight nine problems faced by the women in cassava production and processing in the district including land acquisition, access to capital, poor rainfall, irregular extension service, unstable demand for product, fluctuating price; pests and diseases, bush fires and activities of rodents. Out of the nine problems, it was revealed that, the government has the greatest responsibility in providing solution to problems namely, access to capital, irregular extension service, unstable demand for product and fluctuating price. The farmers themselves considered problems involving pests and diseases, bush fires and land acquisition as their responsibility. This reemphasizes the key role that government in developing countries must play in coming out with pragmatic policies aimed at empowering women with resources for them to undertake economic activities that will improve their wellbeing and consequently enhance their contribution to local economic development with the backdrop that teach the person how to fish rather than always giving him fish.

The farmers had problem in having access to capital and were of the view that it was government's responsibility to provide solution to the problem. The analysis showed

that 65 percent of the farmers depended on ploughed back profit in financing their farming operations and 26 percent on relatives. It is recommended that the Central Tongu District Assembly channels its share of the funds released under the Livelihood Empowerment against Poverty into productive economic activities such as supporting the cassava production and processing activities of the women.

It is the responsibility of government to create the prevailing environment that promotes private sector investment since the sector is the engine of growth. Therefore in relation to unstable demand and fluctuating price, it is recommended that the Central Tongu District Assembly seeks external markets for products such as gari and other processed cassava products to also link up the cassava producers to Guinness Ghana Limited which now uses cassava in the production of beer. This will create stable employment for the women in order to ensure their economic empowerment so as to promote local economic development with guaranteed socio-economic wellbeing in the district.

Finally, it came to light that pests and diseases and rodents were among the host of problems faced by the women. The activities of pests and diseases and rodents reduce the output of farm produce and consequently reduce profitability of cassava production and processing and negatively affect the local economic development efforts of private investors such as the women. It is recommended that the Ministry of Food and Agriculture supports the works of the Crop Research Institute to develop disease resistant cassava varietal releases which will eventually lead to the reduction in economic losses in the Central Tongu District.

5.4 Conclusion

Local Economic Development has become a key strategy for promoting social wellbeing of the population in destitution. A survey strategy was adopted to carry out the contribution women make to the local economic development of Central Tongu District via cassava production and processing. In the study 171 women surveyed using stratified and simple probability techniques in selecting the women from among nine cassava producer and processor groups in the Central Tongu District.

The study revealed that among the socio-economic characteristics of the women, educational status and family size had some significant effects on cassava output produced in the district. Cassava production and processing were profitable economic activities with return to investment of GH¢4.09 indicating that for every GH¢1.00 invested in the Central Tongu District a profit of GH¢4.09 could be reaped. It was unfortunate however; that the women did not have access to any government finances in their operations. The farmers depended heavily on ploughed back profit and relatives and to some extent on banks and NGOs for their farm finances.

The contribution that women make to local economic development in the Central Tongu District were characterized by several problems out of which the farmers held the view that government had the greatest responsibility to provide solution. They also indicated very clearly the problems that they could solve themselves and considered some to be a shared responsibility of both the government and the farmer. In spite of the problems, the contributions that women in cassava production make to LED in the areas of job creation opportunities, revenue generation to the Central

Tongu District Assembly, meeting cassava food needs and providing raw material for Guinness Ghana Limited cannot be overemphasized.

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REFERENCES

- Adams, M. N. and Kruppenbach, S. E., 1987. *Gender and Access in the African School. International Review of Education*, 33: 437-454.
- AL-Dehailan, S.S. (2007). *The Participation of Women in Saudi Arabia's Economy: Obstacles and Prospects*. (Unpublished Thesis). Available at: <http://theses.dur.ac.uk/2597/> (Accessed 3rd February, 2013).
- Baah-Ennumh, T. Y and Adom-Asamoah, G. (2012). *The Role of Women in the Informal Economy in Kumasi. Journal of Science and Technology*, 32(2), 56-67.
- Bartik, T. J., (2003). *Local Economic Development Policies. Upjohn Institute Staff Working Paper No. 03-9*. Michigan: Upjohn Institute for Employment Research.
- Blakely, E.J. and Leigh, N.G. (2009). *Planning Local Economic Development*. 4th Ed. London: SAGE Publications, Inc.
- Available at: <http://www.sagepub.com/books> (Accessed 1st January, 2013).
- Curle, A. (1995). *Positive Response to Contemporary Violence*. Oxford: Jon Carpenter Publishing. <http://www.amazon.co.uk/Adam-Curle> (29th January, 2013).
- Dawson, C. (2002). *Practical Research Methods*. Oxford: How To Books Ltd.
- Department of Agriculture, Forestry and Fisheries, (2010). *Cassava Production Guidelines*. Pretoria: Department Of Agriculture, Forestry And Fisheries.
- Duncan, B.A., (2004). *Women in Agriculture in Ghana*. Accra: Printright.
- FAO, (1998). *Global Cassava End-Uses and Markets: Current Situation and Recommendations for Further Study*.

<http://www.ifad.org/pub/ar/1998/e/areng1.pdf>(Accessed on 31st /January, 2013).

FAO, (2012). *Gender Inequalities in Rural Employment in Ghana*. Rome, Food and Agriculture Organization.

<http://www.fao.org/docrep/016/ap090e/ap090e00.pdf> (Accessed 31st January, 2013).

Fomba, S., Dixon, A.G.O., Onadipe, O.O., Alenkhe, E.B. and Sanni, L.O. (2011). *Cassava Value Chain Development by Supporting Processing and Value Addition by Small and Medium Enterprises in West Africa*. Sierra Leone: International Institute of Tropical Agriculture.

Ghimire, P. C. (2010). *Technical Audit of Biogas Plants Constructed under the Framework of NDBMP in Bangladesh*. Dhaka: Infrastructure Development Company Ltd. Available at: http://www.snvworld.org/sites/www.snvworld.org/files/publications/technical_audit_of_biogas_plants_constructed_under_the_framework_of_ndbmp_in_bangladesh_2010.pdf(Accessed 13th February, 2013).

Gillis, M., Perkins, D. H., Romer, M. and Snodgrass, D., (1992). *Economics of Development*. 3rd Edition. New York: W.W &Company.

Ghana Statistical Service, (2008). *Ghana Living Standard Survey report of the fifth round (GLSS 5)*. Accra: Ghana Statistical Service.

Ghana Statistical Service, (2012). *2010 Population and Housing Census*. Accra: Ghana Statistical Service .Available at:http://www.statsghana.gov.gh/2010phc/2010population_and_housing_Census_Final_Results.pdf (Accessed 1st June, 2013).

- Gwen, S., Goga, S. and Murphy, F. (2006). *Local Economic Development: A Primer Developing and Implementing Local Economic Development Strategies and Action Plans*. Washington, D.C: World Bank. Available at: http://siteresources.worldbank.org/INTLED/Resources/led_primer_bookmarked.pdf (Accessed 1st February, 2013).
- Hutchinson, S.R. (2004). *Foundations for Research of Enquiry in Education and Social Sciences*. New Jersey: Mahwah.
- IFAD, (2010). *Global Consultation on cassava as a potential bioenergy crop*. Accra: IFAD.
- Inkoom, D.K.B. (2009). *Planning Education in Ghana. Global Report on Human Settlements 2009*. Nairobi: UNHABITAT.
- International Institute of Tropical Agriculture (2003). *Preemptive Management of the Virulent Cassava Mosaic Disease through an Integrated Cassava Development Approach for Enhanced Rural Sector Economy in the South-South and South-East Zones of Nigeria*. Ibadan: International Institute of Tropical Agriculture.
- International Institute of Tropical Agriculture (2005). *Cassava Enterprise Development Project*. Ibadan: United States Agency for International Development (USAID).
- International Labour Organization (2010). *Gender Mainstreaming in Local Economic Development Strategies*. Geneva: International Labour Organization.
- Jayaraman, K. (1999). *A Statistical Manual for Forestry Research*. Bangkok: FAO. Available at: <ftp://ftp.fao.org/docrep/fao/003/X6831E/X6831E00.pdf> (Accessed 9th January, 2013).

- Kasunic, M. (2005). *Designing an effective survey*. Pittsburg: Carnegie Mellon Software engineering institute. Available at <http://www.sei.cmu.edu/pubweb.html>.
- Mammen, K. and Paxson, C. (2000). *Women's Work and Economic Development*. *The Journal of Economic Perspectives*, 14(4), 141-164.
- MoFA, (2011). *Annual Report*. Accra: Policy Planning and Evaluation Directorate. Available at: <http://www.google.com.gh/search?q=Ministry of Food and Agriculture 2011 Report.pdf> (Accessed 1st June, 2013).
- MoFA, (2011). *Facts and Figures (2010)*. Accra: Statistics Research and Information Directorate (MoFA).
- Nandi, J. A., Gunn, P. and Yurkushi, E.N. (2011). *Economic Analysis of Cassava Production in Obubra Local Government Area of Cross River State, Nigeria*. *Asian Journal of Agricultural Sciences* 3(3): 205-209. Kaduna: Maxwell Scientific Organization.
- Odoemenem, I.U. and Otanwa, L.B. (2011). *Economic Analysis of Cassava Production in Benue State (Nigeria)*. *Current Research Journal of Social Sciences* 3(5), 406-411. Nigeria: Maxwell Scientific Organization.
- Ogunleye, K.Y., Adeola, R.G. and Ibigbami, I. O. (2008). *Gender Roles in Cassava Processing Activities among Processors in Ogo-Oluwa Local Government Area of Oyo State*. *International Journal of Agricultural Economics & Rural Development (IJAERD)* 1(1). Ogbomoso (Nigeria): IJAERD Press.
- Qamar, J, (2000). *The Role of Women in Economic Development of Pakistan* (Unpublished Thesis). Available at: <http://www.unhabitat.org/downloads/docs/GRHS2009/GRHS.2009.pdf>.

- Ramukumba, T. (2012). *The Local Economic Development in the Eden District Municipality*. Western Cape Province (South Africa): *A Case Study of Emerging Entrepreneurs in Tourism Industry*. *American Journal of Tourism*, 1(1), 9 – 15.
- Rist, G. (2006) .*The History of Development: 2nd edition*. London, Zed Books Ltd.
Available at www.zedbooks.demon.co.uk
- Rogerson, C.M. (2009). *Strategic Review of Local Economic Development in South*. Pretoria (South Africa): GTZ. Available at:
http://www2.gtz.de/wbf/4tDx9kw63gma/LED_Strategic_ReviewFinal.pdf-
(Accessed 1st February, 2013).
- Rural Solutions (2012). *Farm Gross Margin and Enterprise Planning Guide*. South Australia: Rural Solutions.
- Sarma, J.S and Kunchai, D., (1991). *Trends and prospects of cassava in the developing world*. Washington D.C: International Food Policy Research Institute (IFPRI).
- Scott, G. J., Rosegrant, M.W. and Ringler, C. (2000). *Roots and Tubers for the 21st Century Trends: Projections, And Policy Options*. *Food, Agriculture and Environment Discussion Paper 31*. Washington D.C: International Food Policy Research Institute (IFPRI).
- SEN, A, (1999). *Development as Freedom*. New York: Oxford University Press.
- Tainton, B. E. (1990). *The Unit of Analysis "Problem" in Educational Research*. *Queensland Researcher*, 6(1), 4-19. Available at:
<http://www.iier.org.au/qjer/qj6/tainton.html> (Accessed 11th February, 2013).
- Tatyana P. S., (2004). *Beyond Economic Growth: An Introduction to Sustainable Development*. Washington D.C: World Bank.

Todaro, M.P., Smith, S.C. (2009). *Economic Development*. England: Pearson Addison Wesley.

UNCTAD/UNEP, (1974). *Patterns of Resource Use, Environment and Development*. International Organization Foundation. Available at http://helsinki.at/projekte/cocoyoc/COCOYOC_DECLARATION_1974.pdf (Accessed 29th January, 2013).

UNDP (1996). *Human Development Report 1996*. New York: Oxford University Press. Available at: http://hdr.undp.org/en/media/hdr_1996_en_chap2.pdf (Accessed 20th January, 2013).

UNDP (2010). *Human Development Report 2010*. New York: Oxford University Press.

Women Manifesto, (2004). *The Coalition on the Women's Manifesto for Ghana*. Accra: Combert Impressions.

World Bank (2004). *Making local Economic Strategies*. Washington. D.C: Availableat: <http://www.worldbank.org/urban/local/toolkit/pages/defining-led.htm>(Accessed 1st February, 2013).

Yin, R. K. (2003). *Case Study Research - Design and Methods*. New Delhi: Sage Publications.

Appendix 1: Computation of Annual Gross Margin for Gari Production

Respondent #	Total Variable Cost(GH¢)	Unit Px of olonka of Gari(GH¢)	Output of Gari(Case 5 Bag) = Q	Quantity of Olonka in a Bag	Total Revenue (GH¢) = Px*Q	Gross Margin(GH¢)
1	300.00	3.20	8	50	1280.00	980.00
2	315.00	3.20	10	50	1600.00	1,285.00
3	345.00	3.20	15	50	2400.00	2,055.00
4	367.00	3.20	20	50	3200.00	2,833.00
5	500.00	3.20	18	50	2880.00	2,380.00
6	400.00	3.20	17	50	2720.00	2,320.00
7	456.00	3.20	16	50	2560.00	2,104.00
8	456.00	3.20	15	50	2400.00	1,944.00
9	366.00	3.20	14	50	2240.00	1,874.00
10	600.00	3.20	16	50	2560.00	1,960.00
11	567.00	3.20	18	50	2880.00	2,313.00
12	568.00	3.20	20	50	3200.00	2,632.00
13	345.00	3.20	20	50	3200.00	2,855.00
14	360.00	3.20	19	50	3040.00	2,680.00
15	350.00	3.20	19	50	3040.00	2,690.00
16	324.00	3.20	18	50	2880.00	2,556.00
17	416.00	3.20	16	50	2560.00	2,144.00
18	355.00	3.20	14	50	2240.00	1,885.00
19	488.00	3.20	13	50	2080.00	1,592.00
20	513.00	3.20	20	50	3200.00	2,687.00
21	567.00	3.20	14	50	2240.00	1,673.00
22	600.00	3.20	15	50	2400.00	1,800.00
23	55.00	3.20	18	50	2880.00	2,825.00
24	666.00	3.20	13	50	2080.00	1,414.00
25	700.00	3.20	14	50	2240.00	1,540.00
26	678.00	3.20	15	50	2400.00	1,722.00
27	524.00	3.20	17	50	2720.00	2,196.00
28	388.00	3.20	18	50	2880.00	2,492.00
29	388.00	3.20	20	50	3200.00	2,812.00
30	355.00	3.20	13	50	2080.00	1,725.00
31	467.00	3.20	12	50	1920.00	1,453.00
32	558.00	3.20	15	50	2400.00	1,842.00
33	588.00	3.20	16	50	2560.00	1,972.00
34	350.00	3.20	14	50	2240.00	1,890.00
35	333.00	3.20	16	50	2560.00	2,227.00
36	555.00	3.20	18	50	2880.00	2,325.00
37	445.00	3.20	18	50	2880.00	2,435.00
38	534.00	3.20	19	50	3040.00	2,506.00
39	559.00	3.20	20	50	3200.00	2,641.00
40	456.00	3.20	20	50	3200.00	2,744.00

41	770.00	3.20	16	50	2560.00	1,790.00
42	700.00	3.20	18	50	2880.00	2,180.00
43	788.00	3.20	12	50	1920.00	1,132.00
44	768.00	3.20	11	50	1760.00	992.00
45	766.00	3.20	14	50	2240.00	1,474.00
46	755.00	3.20	18	50	2880.00	2,125.00
47	744.00	3.20	18	50	2880.00	2,136.00
48	457.00	3.20	19	50	3040.00	2,583.00
49	560.00	3.20	19	50	3040.00	2,480.00
50	599.00	3.20	14	50	2240.00	1,641.00
51	577.00	3.20	18	50	2880.00	2,303.00
52	455.00	3.20	16	50	2560.00	2,105.00
53	388.00	3.20	16	50	2560.00	2,172.00
54	348.00	3.20	15	50	2400.00	2,052.00
55	339.00	3.20	13	50	2080.00	1,741.00
56	368.00	3.20	12	50	1920.00	1,552.00
57	700.00	3.20	13	50	2080.00	1,380.00
58	715.00	3.20	14	50	2240.00	1,525.00
59	790.00	3.20	15	50	2400.00	1,610.00
60	688.00	3.20	13	50	2080.00	1,392.00
61	564.00	3.20	16	50	2560.00	1,996.00
62	568.00	3.20	19	50	3040.00	2,472.00
63	544.00	3.20	18	50	2880.00	2,336.00
64	657.00	3.20	19	50	3040.00	2,383.00
65	587.00	3.20	20	50	3200.00	2,613.00
66	685.00	3.20	18	50	2880.00	2,195.00
67	677.00	3.20	16	50	2560.00	1,883.00
68	600.00	3.20	18	50	2880.00	2,280.00
69	500.00	3.20	18	50	2880.00	2,380.00
70	450.00	3.20	16	50	2560.00	2,110.00
71	560.00	3.20	21	50	3360.00	2,800.00
72	543.00	3.20	23	50	3680.00	3,137.00
73	564.00	3.20	25	50	4000.00	3,436.00
74	670.00	3.20	26	50	4160.00	3,490.00
75	366.00	3.20	30	50	4800.00	4,434.00
76	344.00	3.20	30	50	4800.00	4,456.00
77	488.00	3.20	25	50	4000.00	3,512.00
78	564.00	3.20	26	50	4160.00	3,596.00
79	550.00	3.20	24	50	3840.00	3,290.00
80	563.00	3.20	28	50	4480.00	3,917.00
81	890.00	3.20	26	50	4160.00	3,270.00
82	820.00	3.20	24	50	3840.00	3,020.00
83	900.00	3.20	23	50	3680.00	2,780.00
84	817.00	3.20	25	50	4000.00	3,183.00

85	900.00	3.20	24	50	3840.00	2,940.00
86	915.00	3.20	26	50	4160.00	3,245.00
87	880.00	3.20	25	50	4000.00	3,120.00
88	800.00	3.20	24	50	3840.00	3,040.00
89	825.00	3.20	23	50	3680.00	2,855.00
90	810.00	3.20	24	50	3840.00	3,030.00
91	809.00	3.20	25	50	4000.00	3,191.00
92	827.00	3.20	26	50	4160.00	3,333.00
93	837.00	3.20	24	50	3840.00	3,003.00
94	867.00	3.20	23	50	3680.00	2,813.00
95	846.00	3.20	25	50	4000.00	3,154.00
96	867.00	3.20	23	50	3680.00	2,813.00
97	855.00	3.20	24	50	3840.00	2,985.00
98	854.00	3.20	25	50	4000.00	3,146.00
99	890.00	3.20	25	50	4000.00	3,110.00
100	890.00	3.20	28	50	4480.00	3,590.00
101	876.00	3.20	23	50	3680.00	2,804.00
102	844.00	3.20	24	50	3840.00	2,996.00
103	866.00	3.20	24	50	3840.00	2,974.00
104	860.00	3.20	25	50	4000.00	3,140.00
105	877.00	3.20	23	50	3680.00	2,803.00
106	980.00	3.20	25	50	4000.00	3,020.00
107	855.00	3.20	26	50	4160.00	3,305.00
108	833.00	3.20	30	50	4800.00	3,967.00
109	866.00	3.20	24	50	3840.00	2,974.00
110	844.00	3.20	28	50	4480.00	3,636.00
111	826.00	3.20	29	50	4640.00	3,814.00
112	823.00	3.20	29	50	4640.00	3,817.00
113	845.00	3.20	25	50	4000.00	3,155.00
114	840.00	3.20	23	50	3680.00	2,840.00
115	834.00	3.20	21	50	3360.00	2,526.00
116	847.00	3.20	25	50	4000.00	3,153.00
117	864.00	3.20	23	50	3680.00	2,816.00
118	850.00	3.20	24	50	3840.00	2,990.00
119	856.00	3.20	25	50	4000.00	3,144.00
120	860.00	3.20	28	50	4480.00	3,620.00
121	832.00	3.20	22	50	3520.00	2,688.00
122	843.00	3.20	30	50	4800.00	3,957.00
123	846.00	3.20	25	50	4000.00	3,154.00
124	832.00	3.20	23	50	3680.00	2,848.00
125	843.00	3.20	26	50	4160.00	3,317.00
126	834.00	3.20	33	50	5280.00	4,446.00
127	866.00	3.20	35	50	5600.00	4,734.00
128	856.00	3.20	33	50	5280.00	4,424.00

129	856.00	3.20	31	50	4960.00	4,104.00
130	843.00	3.20	32	50	5120.00	4,277.00
131	870.00	3.20	35	50	5600.00	4,730.00
132	800.00	3.20	33	50	5280.00	4,480.00
133	865.00	3.20	36	50	5760.00	4,895.00
134	832.00	3.20	40	50	6400.00	5,568.00
135	867.00	3.20	33	50	5280.00	4,413.00
136	856.00	3.20	35	50	5600.00	4,744.00
137	823.00	3.20	31	50	4960.00	4,137.00
138	845.00	3.20	35	50	5600.00	4,755.00
139	865.00	3.20	38	50	6080.00	5,215.00
140	866.00	3.20	36	50	5760.00	4,894.00
141	879.00	3.20	33	50	5280.00	4,401.00
142	876.00	3.20	32	50	5120.00	4,244.00
143	800.00	3.20	31	50	4960.00	4,160.00
144	856.00	3.20	32	50	5120.00	4,264.00
145	873.00	3.20	34	50	5440.00	4,567.00
146	823.00	3.20	32	50	5120.00	4,297.00
147	845.00	3.20	31	50	4960.00	4,115.00
148	1000.00	3.20	32	50	5120.00	4,120.00
149	1201.00	3.20	33	50	5280.00	4,079.00
150	1009.00	3.20	32	50	5120.00	4,111.00
151	1000.00	3.20	34	50	5440.00	4,440.00
152	1245.00	3.20	34	50	5440.00	4,195.00
153	1500.00	3.20	32	50	5120.00	3,620.00
154	1508.00	3.20	32	50	5120.00	3,612.00
155	1400.00	3.20	35	50	5600.00	4,200.00
156	1345.00	3.20	35	50	5600.00	4,255.00
157	1340.00	3.20	32	50	5120.00	3,780.00
158	1569.00	3.20	35	50	5600.00	4,031.00
159	1440.00	3.20	33	50	5280.00	3,840.00
160	1023.00	3.20	35	50	5600.00	4,577.00
161	1000.00	3.20	31	50	4960.00	3,960.00
162	1390.00	3.20	31	50	4960.00	3,570.00
163	1400.00	3.20	41	50	6560.00	5,160.00
164	1400.00	3.20	42	50	6720.00	5,320.00
165	1567.00	3.20	41	50	6560.00	4,993.00
166	1490.00	3.20	42	50	6720.00	5,230.00
167	1300.00	3.20	43	50	6880.00	5,580.00
168	1000.00	3.20	42	50	6720.00	5,720.00
169	1000.00	3.20	42	50	6720.00	5,720.00
170	1500.00	3.20	41	50	6560.00	5,060.00
171	1350.00	3.20	41	50	6560.00	5,210.00
	129,590.00		4,125.00	8,550.00	660,000.00	530,410.00

Source: Field Survey, August, 2013

Appendix 2: Questionnaires for the Women Groups

Topic: Women's Contribution to Local Economic Development: A Study of Women in Cassava Production and Processing in Central Tongu District

General Instruction: Tick options applicable to you where boxes follow questions and provide written answers to the best of your ability where there are broken lines.

Name of Cassava Production and Processing Group:

A. Socio-Economic Characteristics of Women in Cassava Production and Processing.

1. Respondent's Age Group (tick appropriately):

10- 20 years 21 – 30 years 31 – 40 years 41 – 50 years
51 – 60 years 61 – 70 71- 80

2. Educational level attained: Basic Second Cycle Tertiary
 Non Formal None

3. Marital Status: Married Single Divorced Widowed
Separated

4. Average Family size: 1- 2 3 – 4 5 - 6 7 – 8
9 and above No children

5. Estimate your annual income (GH¢) from cassava production and Processing:

Less than 2,000.00 2,000.00 – 2,999.00 3000.00 – 3,999.00
4,000.00 – 4,999 5,000.00 – 5,999.00 6,000.00 – 6,999.00
7,000.00 – 7,999.00 8,000.00 – 8,999.00 9,000.00 – 9,999.00

6. Indicate number of years in cassava production and processing.....

B. Activities Performed by Women in Cassava Production and Processing in the District

7. Means of land acquisition for cassava production? By inheritance

Lease Gift Purchase

8. Technology used in ploughing land: By tractor Traditional tools

9 Listed in the table are some farm activities. In each case indicate who executes the activities as classified by writing the code or codes. Myself = 1, Labour Only = 2, Assisted by Husband or Children = 3, Husband only = 4

Farm Activities	Land clearing	Planting	weeding & maintenance	Harvesting	Carting cassava
Who Executes Activities					

10. Use the information in 9 to complete the table for post farm activities below.

Post Farm Activities	Peeling	Carting to the grater and back	Pressing	Processing	Sale of product
Who Executes Activities					

11. The cost of farm and post farm activities per farming season could best be described as variable as they relate to labour services. Complete the table that follows.

Cost of Farm Activity(GH¢)	Cost of Post Farm Activity(GH¢)	Total Variable Cost(TVC)

11. In what state do you sell cassava? Raw Processed

13. Preferred cassava varieties you grow: Afisiafi Husivi Dogbo

Agric Agegevi Sosha Bankyehemaa Ankra

Bosomsia Ahokpo Antigrace Varieties not listed

14. Estimate the output level of cassava production (tons):

15. Select one major cassava product that you produce: Gari Biscuit

Flour Bread Starch Agbeliakaklo

Cassava dough and Konte Yakayake Products not listed

16. If gari constitutes your major processed cassava product, estimate the annual output level (case 5 bag):

C. Support Systems Available for Women in the Local Economic Development of Central Tongu District

17. Do you receive improved cassava varieties from Central Tongu Directorate of Food and Agriculture? Yes No

18. If you do not receive cassava varieties from the Central Tongu Directorate of Food Agriculture then indicate your major source of cassava varieties: From own previous production Bought from other farmers Gift

19. Do you receive any technical support from Extension Officers for your operations? Yes No

20. If 'Yes', how often? Weekly Monthly Annually

20. Have you ever had any technical support from an NGO? Yes No

22. How do you finance your farming activities? Ploughed back profit Capital from relatives MASLOC Credit Union NGO fund Bank loan Other sources

D. Profitability of Cassava Production and Processing in the District

23. Do cassava production and processing constitute your main source of agricultural employment? Yes No

24 Do you grow other crops apart from cassava? Yes No

25. If 'Yes', identify the other crops that you grow

Maize Beans Water melon Groundnut Vegetables

Maize and vegetables Maize and groundnut

Maize, groundnut and vegetables Not listed

26. Among crops that you grow does, cassava constitute the major source of income to you? Yes No

27. Do you keep record of your production activities? Yes No

28. In your opinion, do you think cassava production and processing are profitable economic ventures? Yes No

E. Problems Women in Cassava Production and Processing Face in the Local Economic Development of Central Tongu District

29. Do you face some problems in your operations? Yes No

30. If 'Yes', tick from among the problems applicable to you indicating which agent(s) can best solve each of them.

S/N	Problems	Who can best solve the problem?						
		Government	NGO	Farmer	Government & NGO	Government & Farmer	NGO & Farmer	None
1	Land acquisition							
2	Access to capital							
3	Poor rainfall							
4	Irregular extension service							
5	Unstable demand for product							
6	Fluctuating price							
7	Pests and diseases							
8	Bush Fires							
9	Activities of rodents							

Questionnaire Completion Date:

Thank you for the support

Appendix 3: Questionnaires for Directorate of Food and Agriculture

Topic: Women’s Contribution to Local Economic Development: A Study of Women in Cassava Production and Processing in Central Tongu District

General Instruction: Please, complete the table that follows.

1. Support systems available for cassava production and processing in the Central Tongu District.

S/N	Kind of Support Ever Made Available for Crops Production	Access to the Support: Free, registration/processing fee
1		
2		
3		
4		
5		

2. List the problems you face in the provision of technical support services to cassava producers and processors in the district.

.....

.....

.....

.....

Questionnaire Completion

Date:

I thank you for the support

Appendix 4: Questionnaires for Crop Research Institute, Kumasi

Topic: Women's Contribution to Local Economic Development: A Study of Women in Cassava Production and Processing in Central Tongu District

General Instruction: Please, complete the tables that follow.

1. Information on cassava production in Ghana:

S/N	Cassava Varieties	Year of Release	Its Use: Human Consumption, Industrial, Both	Maturity Period	How: Free or at a cost(indicate)
1					
2					
3					
4					
5					
6					
7					
8					
9					

2. Support System Available for Cassava production and Processing:

S/N	Kind of Support Ever Made Available	How support is accessed: Free, at a cost
1		
2		
3		
4		

Questionnaire Completion Date:.....

I thank you for the support

Appendix 5: Questionnaires for NGOs in Agriculture

Topic: Women’s Contribution to Local Economic Development: A Study of Women in Cassava Production and Processing in Central Tongu District

General Instruction: Please, complete the table that follows.

Support systems available for cassava production and processing in the Central Tongu District.

Name of NGO:.....

S/N	Support Offered	Year Support was Given	How: Free, at a cost (indicate)
1			
2			
3			
4			
5			
6			
7			
8			

Questionnaire Completion

Date:

I thank you for the support

Appendix 6: Questionnaires for Central Tongu District BAC

Topic: Women’s Contribution to Local Economic Development: A Study of Women in Cassava Production and Processing in Central Tongu District

General Instruction: Please, complete the table that follows.

Support systems available for cassava production and processing in the Central Tongu District.

S/N	Kind of Support	State of Support: Continuous, Ended (Indicate)	How Accessed: Free, at a cost (indicate)
1			
2			
3			
4			
5			
6			
7			
8			

Questionnaire

Completion

Date:

I thank you for the support

Appendix 7: Questionnaires for men in Amegakofe Newlife Women Group

Topic: Women’s Contribution to Local Economic Development: A Study of Women in Cassava Production and Processing in Central Tongu District

General Instruction: Tick options applicable to you where boxes follow questions and provide written answers to the best of your ability where there are broken lines.

Name of Cassava Production and Processing Group:

1. Do you think men alone can bring local economic development to Central Tongu District? Yes No

2. If ‘Yes’, give reason.....

3. If, ‘No’, give reason.....

4. Indicate clearly, the role you play in the women cassava production and processing group:

i.

ii.

iii.

iv.

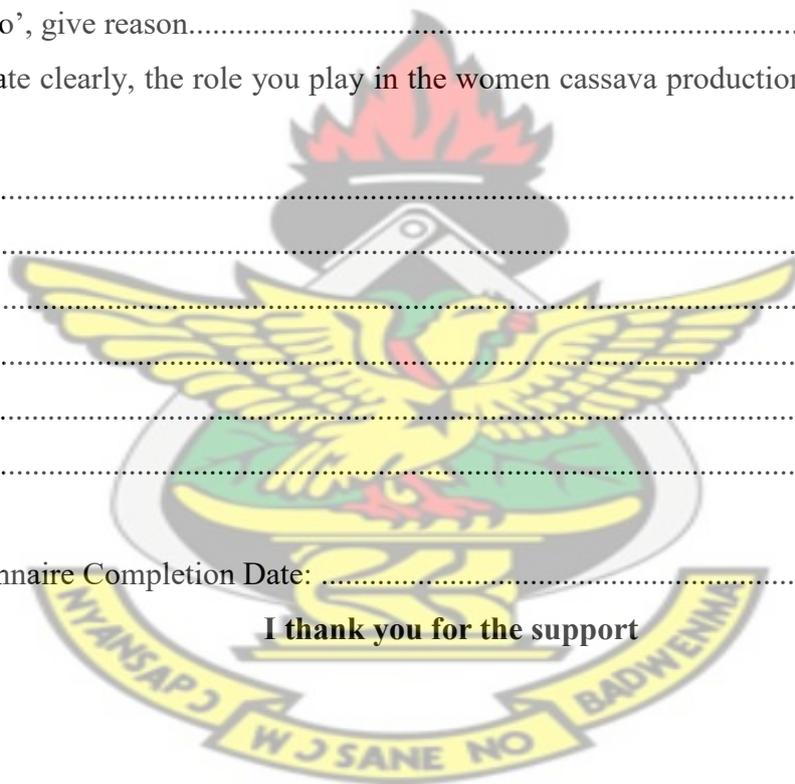
v.

vi.

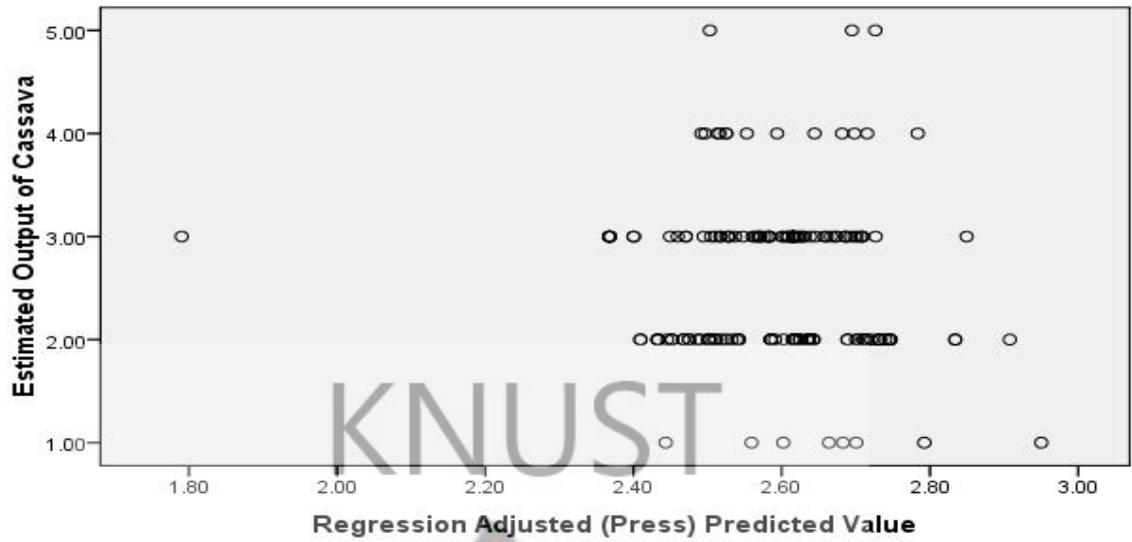
....

Questionnaire Completion Date:

I thank you for the support



Appendix8: Relationship between Dependent and Independent Variables.



Source: Field Survey, August, 2013

