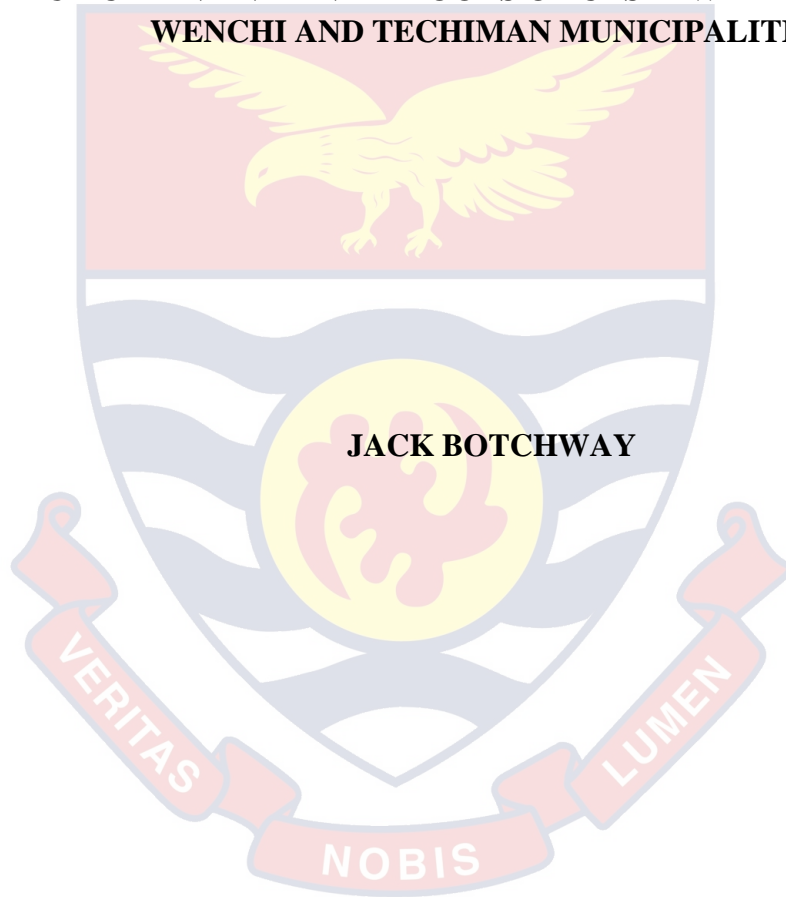


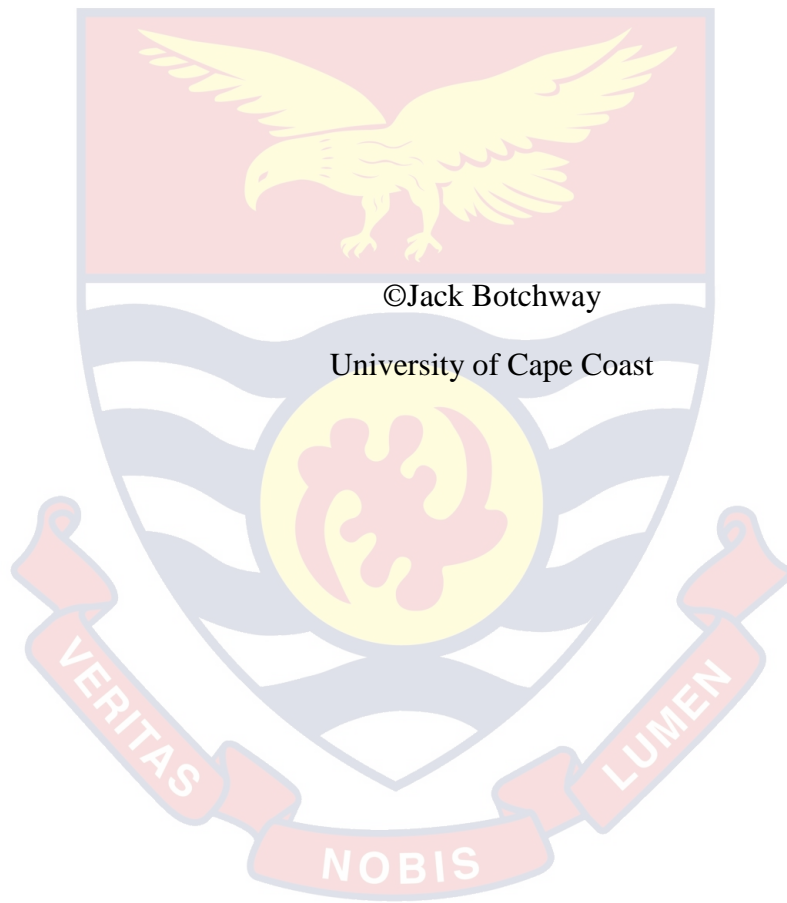
UNIVERSITY OF CAPE COAST

AN OPERATIONAL FRAMEWORK FOR IMPROVING THE CASHEW  
VALUE CHAIN AND LIVELIHOODS OF CASHEW FARMERS IN THE  
WENCHI AND TECHIMAN MUNICIPALITIES



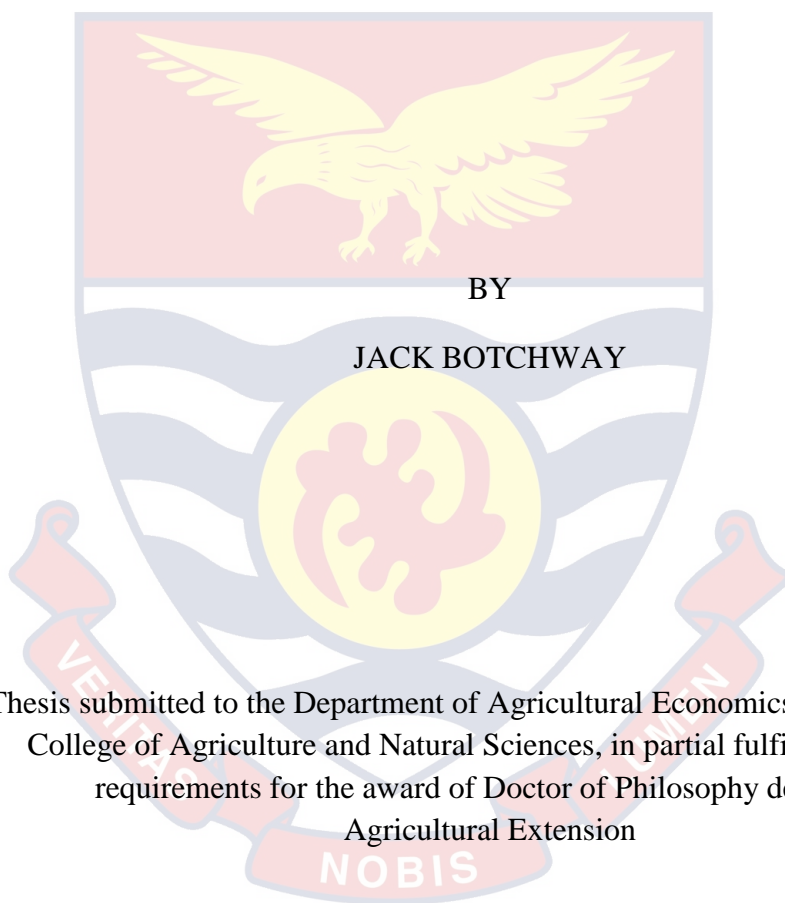
JACK BOTCHWAY

2018



UNIVERSITY OF CAPE COAST

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IN THE WENCHI AND TECHIMAN MUNICIPALITIES



Thesis submitted to the Department of Agricultural Economics and Extension,  
College of Agriculture and Natural Sciences, in partial fulfillment of the  
requirements for the award of Doctor of Philosophy degree in  
Agricultural Extension

MAY 2018

## DECLARATION

### Candidate's Declaration

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

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

Name .....

### Supervisor's Declaration

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

Principal Supervisor's Signature ..... Date .....

Name .....

Co-Supervisor's Signature ..... Date .....

Name .....



## ABSTRACT

This research unearthed challenges in the cashew value chain and developed an operational framework to overcome them and improve livelihoods of farmers in the Wenchi and Techiman municipalities. A descriptive cross-sectional survey and a mixed methods design were used. The quantitative and qualitative data were analysed with SPSS version 20 and content analysis respectively. The mean age of cashew farmers was found to be 55 years. They have cordial relations with cashew traders but not with input dealers, processors and researchers. Cashew farmers perceive extension not to have performed its roles adequately to help develop the value chain. Financial support (particularly loans) from banks is not available to cashew farmers and majority (90.3%) of them claim banks in the Wenchi and Techiman municipalities are not cashew-farmer friendly. Awareness-raising through radio, TV and the print media about the economic importance of cashew and capacity building of farmers are not pursued in the development of the cashew value chain. There is no umbrella organisation that is directly responsible for cashew and the range of policies currently offered in the cashew industry is not comprehensive. The average contribution of cashew to the livelihoods of cashew farmers and their households in the Wenchi and Techiman municipalities is 55%. If an operational framework founded on six critical issues namely: an earnest commencement of the cashew value chain; marketing; value chain financing (VCF); inputs/cultural practices; training/capacity building; and research with corresponding strategies for implementation is operationalised, cashew could contribute minimum 85% to cashew farmers' livelihoods to bring many of them permanently out of poverty.

## KEY WORDS

Agricultural Extension

Cashew Farmers Characteristics

Operational Framework for Improving Cashew Value Chain and Livelihoods

Research

Strengthening Strategies for Cashew Value Chain and

Support System for Cashew Value Chain



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## DEDICATION

To my wife Iris and my daughters Mesuah and Sackeybea





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## LIST OF ACRONYMNS

ACA	African Cashew Alliance
ACi	African Cashew Initiative
AfDB	African Development Bank Group
ADB	Agricultural Development Bank
AEA	Agricultural Extension Agent
AFI	Association of Food Industries
BOG	Bank of Ghana
BSA	Business Support Agency
CaFSA	Cashew Farmers Special Account
CBT	Cashew Board of Tanzania
CENTA	Combined Edible Nut Trade Association
CIDP	Cashew Infrastructure Development Project (Zambia)
CIRAD	Centre de cooperation internationale en recherche agronomique
CNSL	Cashew Nut Shell Liquid
CRBD	National Bank of Commerce (Tanzania) Limited
CRIG	Cocoa Research Institute of Ghana
CSD	Cocoa Services Division of MoFA
DFID	Department for International Development
EBSCO	Elton B. Stephens Company
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database



FBO	Farmer Based Organisation
FDI	Foreign Direct Investment
GARDJA	Ghana Agriculture and Rural Development Journalists Association
GDP	Gross Domestic Product
GGEA	Ghanaian-German Economic Association
GIM	Growing Inclusive Markets
GIZ	Deutsche gesellschaft für International Zusammenarbeit
GIZ/MOAP	Deutsche gesellschaft für International Zusammenarbeit/Market Oriented Agriculture Programme
GLSS	Ghana Living Standards Survey Report Round Six
GNA	Ghana News Agency
GSS	Ghana Statistical Service
HACCP	Hazard Assessment and Critical Control Points
HLS	Household Livelihood Security
HRM	Human Resource Management
ICT	Information Communication Technology
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Corporation
IIED	International Institute for Environment and Development
IMA	Institute of Management Accounting
INRA	Institut Nationale de la Recherche Agronomique
IPM	Integrated Pest Management
IPR	Intellectual Property Right

ISO	International Organisation for Standardization
ITC	International Trade Centre
MAFC	Ministry of Agriculture Food and Cooperatives of Tanzania
MoFA	Ministry of Food and Agriculture
MT	Metric Ton
MUCG	Methodist University College Ghana
NMB	National Microfinance Bank in Tanzania
NGO	Non-Governmental Organisation
OLC	Olam Livelihood Charter
PBC	Produce Buying Company
PFAG	Peasant Farmers Association of Ghana
RCN	Raw Cashew Nut
R&D	Research and Development
R4D	Research for Development
SEND	Social Enterprise Development Foundation of West Africa
SFMC	Savanna Farmers Marketing Company
TQM	Total Quality Management
TV	Television
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
VCF	Value Chain Financing

WCFMU      Wenchi Cashew Farmers and Marketing Union

WFP          World Food Programme

WTO          World Trade Organisation



## CHAPTER ONE

### INTRODUCTION

This chapter presents information on the background to the study, statement of the problem, purpose of the study, general/specific objectives, research questions, significance of the study, delimitation, limitations, definition of terms and how the study was generally organised.

#### **Background to the Study**

Agriculture until very recently was the main stay of the Ghanaian economy (Akudugu, Garforth & Dorward, 2013; BOG, 2017). For decades, it was the foremost in the contribution to the country's GDP (Jayaram, Riese & Sanghvi, 2010). The economy then was agrarian but only recently, the trend has changed and the economy can now be described as one of a service typology (Ghana Statistical Service (GSS, 2016).

According to the Ghana Statistical Service (GSS, 2014), the agricultural sector contribution to Gross Domestic Product (GDP) fell from 31.8% in 2009 to 22% in 2013, allowing the services sector to assume first place followed by the industry sector. GSS (2014) further stated that the revised GDP estimates for 2013 showed a growth of 7.1% over the 2012 final estimates of 8.8%. The services sector recorded the highest growth of 8.9%, followed by industry 7.0%, with agriculture recording the lowest growth rate of 5.2%. Though the estimates show an improvement in the growth of the agriculture sector, 5.2% in 2013, compared

to 2.3% in 2012, its contribution to the economy continues to decline, with its share reducing from 23.0% in 2012 of GDP to 22.0% in 2013 as shown above. Crops, however, remain the largest activity in the economy with a share of 16.9% of GDP (Ghana Statistical Service, 2014). The agricultural sector contribution to GDP was 21.5 for 2014, 20.3 for 2015 and 19.1 for 2016 (Ghana Statistical Service, 2016).

Tree crops have played significant roles in the high performance of agriculture towards the GDP of the country. Cocoa's performance towards this achievement has been excellent over the years. In the 1960s, the then government of Ghana introduced cashew into the country's farming system as a cash crop (Frimpong, 2016). Cashew's cultivation is most suited to the edaphic and climatic conditions of the Brong-Ahafo Region where this research was conducted. In Ghana, the Brong-Ahafo Region is the leader in cashew production (Modern Ghana, 2017).

Of the top fifteen producers of cashew nuts in the world in 2010, Ghana was the thirteenth with 35,647 MT. According to the President of the Ghana Cashew Industry Association, Mr Winfred Osei Owusu, though Ghana produces between 50,000 to 70,000 MT per year, the annual figure exported for 2016 was 163,000 MT (GGEA, 2017). Cashew in the country is generally cultivated by farmers as a supplementary crop. Farmers deliberately cultivate cashew with the view to ensure and secure their own future livelihoods when they would have ceased from vigorous farming. For the period that they are not yet on pension, cashew supplements their income. Unfortunately, the average land size per

cashew farmer is a mere 1.3 ha (Wongnaa, 2013). Cashew farmers need to be sensitised about the potential of the crop to help lift them from abject poverty faster and more securely than most crops.

Cashew has a lot of uses (Axe, 2017) but regrettably, not many of them have been exploited by farmers in the Brong-Ahafo Region. So far, majority of cashew farmers have focused only on the sale of raw unprocessed nuts also referred to as raw cashew nuts (RCN). While these farmers can easily increase their revenue streams by vigorously pursuing the addition of value to their nuts, utilising the apples for fruit juice, jams, food and feed, processing the testa of the kernels for tannin or producing Cashew Nut Shell Liquid (CNSL) from the shell, none of those revenue-laden activities has so far attracted them. To date, they seem not to know the full potentials of the crop. According to Dedzoe, Seneya and Asiamah (2001), resins obtained from the cashew tree for instance, are of commercial value in the book industry due to their adhesive properties. According to Irvine (1961), wood from the cashew tree is very resistant to termite attack. Furthermore, among the nuts in the world, cashew is the third most important (Rico, Bulló & Salas-Salvadó, 2016). It has big markets in America, Europe and Asia particularly in Vietnam and India (Economist, 2011). Cashew indeed has a great potential to improve the livelihoods of farmers in Ghana (Unilever, 2017; Adeigbe, Olasupo, Adewale & Muyiwa, 2015).

Unfortunately, cashew's take off in the country was slow. To date, three major interventions have been made in the country to help lift cashew production. These efforts were by MoFA, the African Development Bank (AfDB) and the

Tafo Research Station. In 1998, the Ministry of Food and Agriculture (MoFA) commissioned and funded a study to investigate the status of the cashew industry, particularly with regard to potential production areas and levels, and the performance and problems hindering the development of the industry (Kumbanyiwa, Dosso & Kassalu-Coffin, 2000). An amount of \$ 15.5 million was also sunk into the cashew industry by the AfDB for six years from 2001 with the view to increase the production of cashew to generate rural incomes, enhance living standards of the rural population, increase the foreign exchange earnings for the country and contribute to poverty reduction in ten districts located in five regions, namely Northern, Upper West, Brong-Ahafo, Volta and Greater Accra regions of Ghana. The project components were: i) Production Development; ii) Extension and Training; iii) Credit; iv) Project Management and Technical Assistance (Kumbanyiwa, Dosso & Kassalu-Coffin, 2000). The Cocoa Research Institute of Ghana (CRIG) at Tafo-Akim has also been making some efforts at providing clonal seedlings instead of cashew seeds as planting materials to farmers to ensure uniformity in both growth and yield potential (Dadzie *et al.*, 2014).

The AfDB Appraisal Report established that cashew can and is grown in most parts of the country, albeit with minimal or no agricultural service support. It concluded that there is tremendous potential to increase the area under cultivation and consequently increase the production of cashew nuts and kernels for local consumption and for export. Furthermore, the report indicated that cashew production has the potential of generating significant additional income for the

rural populations, hence contributing to poverty reduction (Kumbanyiwa *et al.*, 2000).

According to the AfDB Appraisal Report, the Cocoa Services Division (CSD) of MoFA, which is in charge of promoting the development of cashew production, is constrained by the limited knowledge of its technical staff in cashew production. This left farmers with inadequate extension support services limited to establishment and maintenance of plantations (Kumbanyiwa *et al.*, 2000).

To date therefore, the cashew industry in Ghana is fraught with some critical challenges (Minta, 2017). The yield per hectare is low (Monteiro, 2017) while there is the potential to increase productivity from the present yield level of 200 kg/ha to about 800 kg/ha (Weidinger, 2015). Additionally, there is no Board in place to enact regulatory policies and set the business tone for operatives in the industry to follow. Consequently, cashew prices are determined arbitrarily. Anecdotal evidence indicates that, farmers via their unions are left on their own to negotiate cashew prices with astute businessmen from the developed world. The outcomes of such mismatched market price negotiations do not favour cashew farmers. As a result, some opportunistic exporters and importers take cashew farmers for granted as pushovers paying them ridiculously low prices for their produce. Indeed, there are no policy guidelines to protect and help cashew farmers in the country.

In Europe, North America, Canada, Australia and several other places in the world, farmers are self-sufficient and are not poor financially. Unfortunately,



farmers in Africa are financially poor and in Ghana their situation is no different. Agriculture represents 42% of the total work force in the country (MoFA, 2013) and the poor status of farmers generally is a source of worry to many agriculture professionals including the researcher. Fortunately, by observing the unique harvesting period of cashew in the Brong-Ahafo Region over a very long time, the researcher believes that through a study and careful manipulation of the cashew value chain, cashew as a cash crop can help improve farmers' livelihoods and bring them permanently out of poverty.

Cashew harvesting and its proceeds occur in the dry season (Khumbanyiwa, Dosso & Kasalu-Coffin, 2000), right after the Muslim and Christmas celebrations when farmers have spent monies on the celebrations, and at a time when most field crops have already been harvested with nothing left on the fields. Cashew therefore carries a huge potential as a saviour crop to transform the livelihoods of farmers on a sustainable basis within their life time if well managed. Despite this huge potential cashew has plus all the interventions so far made by both government and business support agencies, one wonders why the average land size of cashew plantations in the Brong-Ahafo Region is a mere 1.3 ha when land availability is not a limiting factor. Consequently, one is inclined to think that there could be some hidden challenges associated with the cultivation of cashew in the country (Wongnaa, 2013).

## Statement of the Problem

Agricultural Extension Agents (AEAs) are the repository of facts for changing the knowledge base, attitudes, practices and skills of farmers in Ghana (Agriculture for Impact, 2017). As a result, when their own thematic brief in any sphere of agriculture is weak, it affects their service delivery in that field and they are unable to deliver expertly. This is the situation with AEAs' knowledge on cashew cultivation in the country. According to Kumbanyiwa *et al* (2000), AEAs' knowledge on cashew is limited to only establishment and maintenance of plantations. Consequently, AEAs are not able to guide cashew farmers to achieve high productivity as occurs in Asia and Brazil. Currently, there is among cashew farmers an unhealthy prevalence of non-compliance in respect of the requirements for the observance of cultural practices. Once the cashew plants establish, farmers erroneously think there is not much to be done except harvesting and so they inadvertently neglect vital cultural practices that are rather critical for attaining high productivity. Technically, they stop investing meaningfully in their plantations once the trees are established.

To date, operating costs in cashew farms after the cashew trees have established are generally quite low (Wongnaa, 2013). This is partly because cashew farmers themselves do not think their established cashew trees need such care as would warrant loans from banks plus the fact that some banks in the Brong-Ahafo Region do not find it convenient and safe to give loans to cashew farmers. Additionally, well before harvest time and also after harvest, cashew farmers are unable to locate high value cashew markets partly due to errors in

their marketing strategies. Currently, some cashew farmers are unable to dry their raw cashew nuts (RCN) as a means of adding value before traders forcefully take them from their custody as payment for loans granted them. The cashew industry in Ghana operates without much strategic guidance. Such guidance needed to let sanity prevail in the cashew industry is unavailable because since the 1960s to date there is no cashew board in place to guide the generation, enactment and review of policies that could protect the cashew industry and safeguard the interest of actors particularly cashew farmers along the cashew value chain. In general, the cashew value chain in the Brong-Ahafo Region of Ghana is weak (Heinrich, 2012).

### **Purpose of the Study**

The purpose of this research is to unearth the supposedly hidden challenges in the cashew value chain, develop an operational framework to improve the chain and eventually improve livelihoods of farmers in the Wenchi and Techiman municipalities.

### **Specific Objectives**

The specific objectives of the study are:

1. To describe the characteristics and roles of key actors in the cashew value chain in the Wenchi and Techiman municipalities.
2. To evaluate the support system for the cashew value chain in the Wenchi and Techiman municipalities in terms of:
  - a) Availability of inputs
  - b) Infrastructure and

c) Policy regulation

3. To assess the strengthening strategies of the cashew value chain in the Wenchi and Techiman municipalities.
4. To appraise the cashew value chain development processes in the Wenchi and Techiman municipalities.
5. To ascertain the level of contribution of cashew production to the livelihoods of cashew farmers in the Wenchi and Techiman municipalities as perceived by the cashew farmers themselves.
6. To recommend an Operational Framework for improving the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities.

**Research Questions**

The research questions of the study are:

1. What are the characteristics and roles of key actors in the cashew value chain in the Wenchi and Techiman municipalities?
2. How is the support system for the cashew value chain in the Wenchi and Techiman municipalities in terms of;
  - a) Availability of inputs
  - b) Infrastructure and
  - c) Policy regulation?
3. What is the status of the strengthening strategies for the cashew value chain in the Wenchi and Techiman municipalities?

4. What are the existing conditions of the cashew value chain development processes in the Wenchi and Techiman municipalities?
5. What is the level of contribution of cashew production to the livelihoods of cashew farmers in the Wenchi and Techiman municipalities as perceived by the farmers themselves?
6. What Operational Framework can be recommended for improving the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities?

### **Significance of the Study**

This study brings to the fore a number of challenges that limit the cashew value chain development process in the Wenchi and Techiman municipalities. The study reveals competitive strengths and critical success factors which when taken advantage of by farmers for instance will help them cut down on cost, significantly increase their profit margins and improve their livelihoods. The study unearths who represent(s) cashew farmers at the price negotiating table and reveals the extent to which farmers have a say in cashew price negotiations.

The study throws light on the dynamics of value chain financing (VCF) to help educate financial institutions, processors, Produce Buying Companies and farmers on what to do to embrace and sustain it as a necessary ingredient for the growth of the cashew value chain.

Additionally, the study provides information for training designs for both Agricultural Extension Agents (AEAs) and farmers. It provides facts for policy formulation, improvement and redirection. The research work provides an

operational framework for improving the cashew value chain for farmers in the Wenchi and Techiman municipalities. This framework puts on display the core cashew value chain processes which need fixing and makes possible the strategic preparation of an action plan by extension and the identification of organisations to partner them to undertake these projects with room for setting achievable time lines.

### **Delimitation**

Only the main actors along the cashew value chain were considered for this research work. Consequently, others including transporters and farm labourers for instance were excluded. A census of all the actors along the cashew value chain would be ideal but this would not be cost effective. As a result, the only actors along the cashew value chain included in the study were cashew farmers, input dealers, cashew processors, cashew traders, Business Support Agencies, the Banking Institution, Extension and Research.

### **Limitations**

A number of farmers do not keep records. Most of the information obtained from them was therefore purely from memory. The authenticity of data so collected was therefore purely dependent on their mental prowess to retain historical facts and later recall from memory with precision. As far as possible, data triangulation was used to validate the work and thereby minimise any anticipated limitations.

## Definition of Terms

**Actors:** Actors in this work refer to all stakeholders that benefit directly and indirectly from the cashew value chain. These direct beneficiaries include input dealers, farmers, processors, traders and banking institutions whilst the indirect beneficiaries include extension (of MOFA, Wenchi and Techiman municipalities), Research, and African Cashew Initiative (ACi).

**Benchmarking:** A benchmark may be defined as the prearranged height or standard. It could cover such issues or items like cost, quality, blueprint, effectiveness, competence and cost-effectiveness. In life, all comparisons are conducted against the benchmark. Benchmarking is a methodical, ordered strategy to obtain best practice.

**Business Support Agencies:** These are both public and private organisations that have interest in the excellent performance of all the actors in the cashew value chain in Brong-Ahafo. In this research work, they include Extension of MoFA in Wenchi and Techiman Municipalities; Wenchi Research Station; Faculty of Agriculture, Wenchi campus, Methodist University College Ghana (MUCG); International Fertilizer Development Corporation (IFDC); Africa Cashew Alliance (ACA) and Africa Cashew Initiative (ACi).

**Cashew Farmers:** These are the adult males and females who engage either directly or indirectly in the cultivation of cashew for financial benefits.

**Competitive Advantage:** An enterprise's competitive advantage is what remains from the difference between the value it gives to customers and its cost of producing that customer value. The enterprise gains competitive advantage when

it undertakes critical assignments more cheaply than its competitors by strategically distilling efficiency and effectiveness from skills to create value for money.

**Continuous Improvement:** This is an unrelenting process of intentional assessment of habits, existing practices, programs and conditions at both individual and corporate levels to ensure better produce and products come out every time.

**Financial Institutions:** The term as used in this research means any banking institution in the Wenchi and Techiman municipalities that has prior to the onset of this research work ever loaned money to any individual cashew farmer or cashew commodity cluster(s) in the Wenchi and Techiman municipalities.

**Input Dealers:** These are the persons who either engage in wholesale or retail of pesticides (insecticides, fungicides, nematicides, rodenticides and weedicides), chemical fertilisers, foliar feeds and other crop supplements, cutlasses, hoes, knapsack sprayers, seeds of various kinds, cashew seedlings, seed dressings of all sorts, farm implements and all other inputs that are necessary for farm work. They sell to farmers either on farm or off farm.

**Margin:** Margin is the profit that corporate bodies or individuals make based on their ability to manage all the interaction among all activities in the value chain. This implies that a corporate body or an individual is able to deliver a product or offer a service for which the customer is willing to pay more than the total sum of the costs of all activities in the value chain.



**Political Capital:** This is defined as the socio-political right to be heard and the ability to influence decisions.

**Processors:** These are the local entrepreneurs who purchase and add value to raw cashew nuts (RCN) transforming them into edible forms or other forms that can be used in industry. They are either small scale processors who use rudimentary machines or large scale processors who use state of the art machinery.

**Traders:** These are persons who purchase raw cashew nuts (RCN) from farmers either on farm or off farm. Often, they can be seen in single room-offices with weighing scales in towns where cashew is produced. These traders sometimes represent some well-known Produce Buying Companies (PBCs).

**Value Addition:** Value can be added to a product or produce in a number of ways. This can be either directly or indirectly. Value for instance can be added to a product or produce to transform it; it can also be added through storage or by transportation. Value addition is one of the smart ways to increase one's portion of the total margin in a value chain.

**Value Chain:** The term 'Value chain' as used in this research refers to the full range of activities required to bring a product or a service from conception, through the different phases of production, to delivery to final consumers and disposal after use.

**Value Chain Analysis:** Value chain analysis is a strategic way to investigate areas of excellence as well as zones of non-performance, areas of intervention in zones of weaknesses and linking them all to the organisation's

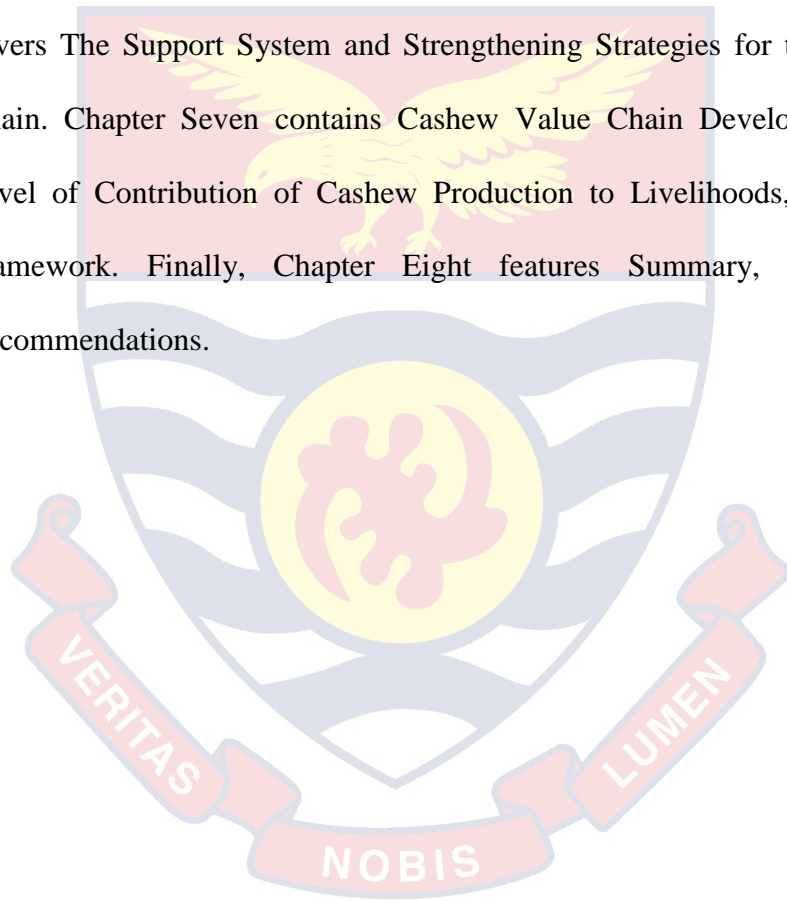
competitive position. Undertaking value chain analysis entails a thorough check for instance on what is going among actors, what is keeping them together, what information is shared with each other and how the relationship among them is evolving.

**Value Chain Financing (VCF):** In this research, VCF is considered as any financial package from a financier that is purposefully directed at an actor or actors of a value chain to help them meet any of their challenges in respect of skills, constraints, marketing etc. Here, VCF is also considered as any financial assistance offered to farmers as either a grant or loan by a financial institution to help them organise the complete cultivation or part thereof of any crop in a value chain.

### **Organisation of the Study**

The study is divided into eight chapters. Chapter One is the Introduction and contains ten sub-topics namely; Background to the Study; Statement of the Problem; Purpose of the Study; Research Objectives/Questions; Significance of the Study; Delimitation; Limitations; Definition of Terms and finally Organisation of the Study. Chapter Two is Theory and Concepts in Value Chain Development. After a brief introduction, literature is reviewed on relevant topics including, The History of the Theory of Constraints; Definition and Concept of the Value Chain; Livelihoods; Evaluation in Extension; The Cashew Value Chain in Ghana: Empirical Evidence; Cashew Value Chain Development Processes: Status and Challenges; The Potential Effect of Cashew Value Chain development on Cashew Farmers' Livelihoods; Chapter Three covers the Main Actors, Support

System and Strengthening Strategies of the Cashew Value Chain. It also features the Conceptual Framework. Chapter Four is the Research Methods. It describes the research design used and the study area. Further, it covers areas including the Study Population; Sampling Procedure; Data Collection Instruments; Data Collection; Data Analysis; and Chapter Summary. Chapter Five is about Characteristics and Roles of Main Actors in the Cashew Value Chain. Chapter Six covers The Support System and Strengthening Strategies for the Cashew value Chain. Chapter Seven contains Cashew Value Chain Development Processes, Level of Contribution of Cashew Production to Livelihoods, and Operational Framework. Finally, Chapter Eight features Summary, Conclusions and Recommendations.



## CHAPTER TWO

### THEORY AND CONCEPTS IN VALUE CHAIN DEVELOPMENT

#### Introduction

This chapter fundamentally reviews the Theory of Constraints under the Theoretical Framework and blends components of it with the Value Chain concept. The Theory of Constraints is chosen to help sort out the bottlenecks in the cashew value chain. This chapter also looks at the original definition of value chain and how it has evolved over time. It discusses the value chain concept and also looks at the value chain development approaches and processes. The chapter throws some light on a number of important auxiliary concepts that are common in value chains.

#### Theoretical framework of the thesis

For a proper understanding of the cashew value chain, it became necessary to employ the theory of constraints. In the following pages, the theory is explicated.

#### History of the Theory of Constraints

According to the Vorne Industries (2016), the Theory of Constraints (TOC) was introduced in 1984 by Dr. Eliyahu M. Goldratt in his bestselling business novel “The Goal” which spread rapidly thereafter. Vorne industries further explained that the Theory of Constraints is a methodology for identifying the most important limiting factor (i.e. constraint) that stands in the way of

achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. According to Vorne Industries, in manufacturing, the constraint is often referred to as a bottleneck. The Theory of Constraints takes a scientific approach to improvement and hypothesises that every complex system, including manufacturing processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system (i.e. the constraint activity is the “weakest link in the chain”).” According to Rahman (1998), the Theory of Constraints (TOC), provides a coherent management theory for running an organisation and has two major components: a philosophy which underpins the working principle of ongoing improvement, and a generic approach for investigating, analysing and creating solutions to problems called the “thinking process” (TP). According to Vorne Industries, every process has a constraint (bottleneck) and focusing improvement efforts on that constraint is the fastest and most effective path to improved profitability.

According to Simsit, Gunay and Vayvay (2014), the Theory of Constraints (TOC) is a management philosophy which is focused on the weakest ring(s) in the chain to improve the performance of systems. In their view, companies, whether they are in the production or service sector should be more focused on understanding their own structure in terms of processes to survive in a global competition. In this situation, they claim, that TOC becomes an important problem structuring and solving methodology which changes the way of thinking of managers.

### Five Steps of the Theory of Constraints (TOC) Process

According to Vorne Industries (2016), there are three components to the Theory of Constraints. These are: The five focusing steps; The Thinking Process; and Throughput Accounting. They further explicated that the Five Focusing Steps is a methodology for identifying and eliminating constraints while the Throughput Accounting is a method for measuring performance and guiding management decisions. Constraints theory uses *Focusing* as an inherent strategy to professionally sift through any production system and come out with critical issues that pertain to production bottlenecks.

According to Dettmer (1997) and Kendall (1998), a logical approach known as Thinking Processes (TPs) of TOC has evolved to address the basic questions. Tulasi and Rao (2012) (as cited in Simsit *et al.*, 2014) also stated that in much the same way as the Five Focusing Steps focus on the constraints, the TPs focus on the factors that are currently preventing the system from achieving its goals. According to Watson, Blackstone and Gardiner (2007), the TPs provide five logic tools to provide a rigorous and systematic means to address identification and resolution of unstructured business problems related to management. The TPs tools have two different types of logic: cause-effect logic which is used in the Current Reality Tree (CRT), Future Reality Tree (FRT), Transition Tree (TT) and necessary condition logic which is used in Evaporating Cloud (EC) and Prerequisite Tree (PRT).

According to Staples (2017), the Current Reality Tree (CRT) is a thinking process in the Theory of Constraints and is designed to help one uncover and

understand the relationships between all the different issues and to make sure you are addressing the right problem. Staples further explained that in complex systems, the real problems are not always obvious and by fixing the “apparent” problem, the real problem will still be there, continuing to cause issues. According to Hohmann (2014), the Current Reality Tree (CRT), is one of the Thinking Processes’ logical tools which depicts the current reality in a series of dependent logical cause-and-effect relationships, starting from Undesirable Effects down to one or a few critical root causes. Hohmann again states that a Future Reality Tree (FRT), is a visualisation of a desired, improved future state which answers the question “what to change to?”. He further explicated that a Future Reality Tree (FRT), usually follows an analysis with a Current Reality Tree (CRT) and an Evaporating Cloud (EC) also known as Conflict Resolution Diagram (CRD). According to Wales (n.d.), the Evaporating Cloud (EC) is one of the six thinking processes in the Theory of Constraints and that it is also referred to in the literature as “Conflict Resolution Diagram”, which is a logical diagram representing a problem that has no obvious satisfactory solution.

Simsit *et al.*(2014) stated that the five stages of the TPs start with the first decision question what needs to be changed and CRT is used to identify the weakest link of the chain which is system’s constraint. Rahman (1998) explained that CRT is a logical structure that depicts the state of reality as it currently exists in a given system. In Rahman (1998)’s view, once the core problem has been identified, in response to the second question, the tools EC and FRT are used. Dettmer (1997) claims that EC resolves hidden conflicts that usually perpetuate

chronic problems. According to Davies *et al.* (2005) (as cited in Simsit *et al.*, 2014), the construction of the FRT can be viewed as “a what-if exercise” to identify the actions and conditions that will be necessary to bring about the desirable effects or change. Simsit *et al.* (2014) explained that once the third stage of the TPs identified the question what to change to, the remaining question deals with how organisations should implement the solutions to achieve the change. According to Simsit *et al.* (2014), PRT identifies obstacles to implementation of new ideas and finally, TT creates an implementation plan step by step.

Simsit *et al.* (2014), claim that Goldratt (1984) says the goal of an organisation is to make more money now and in the future and in order to make money, throughput of an operating system should be increased while its inventory and operating expenses are being reduced. Therefore, according to Simsit *et al.* (2014), the performance of any system is limited by the rate of throughput at the system’s constraint and identifying system’s constraint as the weakest link of the chain and eliminating it is the main idea behind the TOC. In Simsit *et al.* (2014)’s view, it actually focuses on continuous system improvement by dealing with constraints and the theory can be implemented to almost every sector and almost every size of company.

According to Vorne Industries (2016), one of the appealing characteristics of the Theory of Constraints is that it inherently prioritises improvement activities and the top priority is always the current constraint. In environments where there is an urgent need to improve, TOC offers a highly focused methodology for creating rapid improvement. Again, the underlying power of TOC flows from its



ability to generate a tremendously strong focus towards a single goal (profit) and to removing the principal impediment (the constraint) to achieving more of that goal. According to Vorne Industries (2016), Goldratt (1984) in fact considers focus to be the essence of TOC.

### **The Five Focusing Steps**

According to Vorne Industries (2016), the Theory of Constraints provides a specific methodology for identifying and eliminating constraints, referred to as the Five Focusing steps which together form a cyclical process. These are: 1) Identify the Constraint. 2) Exploit the Constraint. 3) Subordinate and Synchronise to the Constraint. 4) Elevate the performance of the Constraint. 5) Repeat the process.

#### **Identify the Constraint**

Identify the current constraint means the single part of the process that limits the rate at which the goal is achieved (Vorne Industries, 2016). The part of a system that constitutes its weakest link can be either physical or a policy (Kettering University, 2016).

#### **Exploit the Constraint**

As explained by Vorne Industries, make quick improvements to the throughput of the constraint using existing resources (i.e. make the most of what you have).

#### **Subordinate and Synchronise to the Constraint**

Review all other activities in the process to ensure that they are aligned with and truly support the needs of the constraint (Vorne Industries). Put another

way, Kettering University (2016) states that the non-constraint components of the system must be adjusted to a setting that will enable the constraint to operate at maximum effectiveness. Kettering University further states that once this has been done, the overall system is evaluated to determine if the constraint has shifted to another component and if the constraint has been eliminated, the change agent jumps to step five.

### **Elevate the Performance of the Constraint**

If the constraint still exists (i.e. it has not moved), consider what further actions can be taken to eliminate it from being the constraint. Normally, actions are continued at this step until the constraint has been “broken” (until it has moved somewhere else). In some cases, capital investment may be required (Vorne Industries). According to Kettering University (2016), major changes to the existing system are considered at this step.

### **Repeat the Process**

The five focusing steps are a continuous improvement cycle. Therefore, once a constraint is resolved, the next constraint should immediately be addressed. This step is a reminder to never become complacent—aggressively improve the current constraint...and then immediately move on to the next constraint (Vorne Industries, 2016). According to Kettering University (2016), in TOC, every complex problem begins with a core conflict and simply put, the Thinking Process is based on cause-and-effect. Kettering explains that Goldratt writes that this enables “breakthrough situations by identifying, challenging and correcting unexamined assumptions.” In the view of Kettering University (2016),

at its most basic level, “TOC provides managers with a set of tools that guide the user to find answers to the basic questions relating to change, namely: What to change? What to change to? and How to cause the change?” It can be generally concluded from the above account that the Theory of Constraints without doubt, encourages peak performance at minimum cost and continuous improvement in all sub-systems and systems. It is for these reasons that the Theory of Constraints was chosen to serve as the bedrock for this research work.

### **Criticisms about TOC**

While TOC has been compared favorably to linear programming techniques, Trietsch (2004 and 2005) argues that Dumb Buffer Rope (DBR) methodology is inferior to competing methodologies. In the view of Trietsch (2004), to make Dumb Buffer Rope (DBR) work, Goldratt (1984) forbids balance and yet Step 4 promotes balance. According to Trietsch (2005), not enough has been done to show formally that 5Fs is theoretically flawed especially where it differs from the Just In Time (JIT) inventory system. Linhares (2009), from the Getulio Vargas Foundation, has shown that the TOC approach to establishing an optimal product mix is unlikely to yield optimum results. Linhares (2009) again points out that TOC proposes that when production is bounded by a single bottleneck, the best product mix heuristic is to select products based on their ratio of throughput per constraint use. This, however, according to Linhares is not true for cases when production is limited to integer quantities of final products.

Duncan (as cited by Steyn 2000) claims that TOC borrows heavily from systems dynamics developed by Forrester in the 1950s and from *statistical*

*process control* which dates back to World War II. Noreen, Smith and Mackey (1995), in their classic report on TOC, point out that several key concepts in TOC "have been topics in management accounting textbooks for decades." Goldratt has been criticized on lack of openness in his theories, an example being him not releasing the algorithm he used for the Optimum Performance Training system. Some view him as unscientific with many of his theories, tools and techniques not being a part of the public domain, rather a part of his own framework of profiting on his ideas. Nave (2002) argues that TOC does not take employees into account and fails to empower them in the production process. He also states that TOC fails to address unsuccessful policies as constraints. In contrast, Mukherjee and Chatterjee (2006) state that much of the criticism of Goldratt's work has been focused on the lack of rigour in his work, but not of the bottleneck approach, which are two different aspects of the issue.

### **Definition of Value Chain**

The term 'Value Chain' was used by Michael Porter in his book "Competitive Advantage: Creating and Sustaining Superior Performance" in 1985 (Reclies, 2001). According to GIZ/MOAP (2006), the value chain was originally defined as how a business receives raw materials as input, adds value to the raw materials through various processes in the middle of the chain and sells the finished products to consumers. Subsequently, other definitions have been given by other authors while the original concept has even been expanded by others in some cases. Miller and Jones (2010) stated that a value chain is often defined as the sequence of value-adding activities from production to consumption through

processing and commercialisation. In the view of Mohanty and Deshmukh (2007), the value chain is a useful analytical model with which to explore the tasks and roles within the overall process of delivering customer satisfaction. They declared that the value chain has been shown to be of practical use in determining how to achieve and maintain competitive advantage in a dynamic market place.

According to Webber and Labaste (2010), chains which are composed of companies or individuals that interact to supply goods and services are variously referred to as productive chains, value chains, marketing chains, supply chains or distribution chains. In the view of these authors, these concepts vary mainly in their focus on specific products or target markets in the activity that is emphasised, and in the way in which they have been applied. They further stated that what they have in common is that they all seek to capture and describe the complex interactions of firms and processes that are needed to create and deliver products to end users. Webber and Labaste concluded that all the concepts strive to identify opportunities for and constraints against increasing productivity.

Originally, the term value chain was used in non-agricultural industry. Later, realizing its capability and resilience in diagnostic endeavours, it started to be applied to agriculture. According to Miller and Jones (2010), the terms value chain and supply chain are often used interchangeably with supply chain being used most frequently in industrial chains. They explained that for agriculture, the term value chain is most appropriate for highlighting the value addition, i.e. transformation of the inputs and products as they pass through the chain.

Kaplinsky and Morris (2001) expanded the original dimensions of the value chain concept. They defined the value chain as the full range of activities required to bring a product (or a service) from conception, through the different phases of production, to delivery to final consumers and disposal after use (Kaplinsky, 1999); Kaplinsky and Morris (2001). These two authors consciously included in the value chain definition, “planning and designing” as well as “disposal after use”. The “disposal after use” aspect for instance, quite innovatively invokes and incorporates the critical issue of individual and corporate responsibility regarding waste disposal into the concept. This clearly is to forestall the indiscriminate pollution of the environment so as to protect the interests of actors of the value chain. GIZ/MOAP (2006) appreciates this point and explains it further. According to them, environmental concerns pose a challenge because they relate to waste management and the potential unintended impact of value chain activities on the environment. This, in the view of GIZ/MOAP can lead to environmental degradation and loss of market opportunities since some buyers are averse to environmental degradation caused by production and social conflicts.

### **Concept of the Value Chain**

In the value chain concept, Porter (1985) considers processes as being composed of a series of discrete activities. Porter (1985) explains that the very occasion or existence of these activities and the total management of the relationships or linkages between and among them serve as a source of competitive advantage. In Porter’s value chain model depicted in Fig.1, Porter

makes a clear distinction between what he called primary activities and support activities. The components of the primary activities are five and these are inbound logistics; operations; outbound logistics; marketing and sales; and service. Primary activities according to Porter are directly concerned with the creation or delivery of a product or service (Emmet, 2005).

From Fig.1, there are four components that form together as the support activities. These are procurement; technology development (including R&D), human resource management, and infrastructure which according to Emmet (2005) means systems for planning; finance; quality; and information management. Emmet (2005) made a profound statement after a careful observation when he stated that each of these primary activities is linked to a support activity which helps to improve their effectiveness or efficiency. This point is very significant because too often in the developing world things are established, installed or built without the support systems which will ensure their effectiveness, efficiency and sustainability.

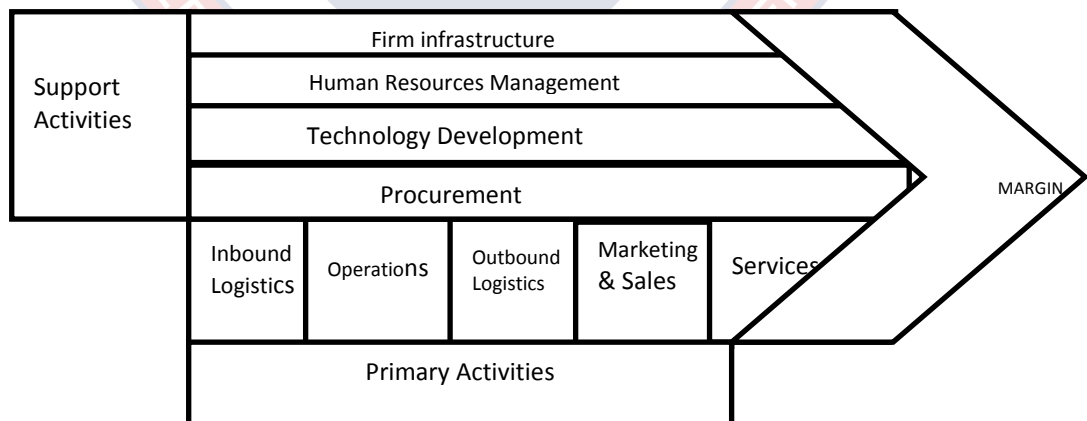


Figure 1: The Value Chain of Michael Porter (1985)

Source: Supply Chain in 90 minutes (Emmett, 2005)

Emmett (2005) explains the components of the primary activities as follows: inbound logistics cover stores, warehousing, handling and stock control; operations cover production and packing and all activities that transfer inputs into outputs; outbound logistics include transport and warehouse networks to get products to customers; marketing and sales cover the methods by which customers know about and purchase products; services include the support for all activities such as installation and returns. Emmet (2005) further defines the components of the support activities as follows: procurement includes the buying and purchasing of products as well as other resources; technology covers things such as ICT and R&D while HRM covers all aspects concerned with personnel. He finally explains that infrastructure covers finance, legal and other general management activities.

According to Brach (2009), one particular concept that Michael Porter has brought to a wider audience is the value chain. In his view, competitive advantage cannot be understood by looking at a firm as a whole because it stems from the many discrete activities a firm performs in designing, producing, marketing, delivering and supporting its product. Each of these activities can contribute to a firm's relative cost position and create a basis for differentiation. The value chain disaggregates a firm into its strategically relevant activities in order to understand the behaviour of costs and the existing and potential sources of differentiation and a firm gains competitive advantage by performing these strategically important activities more cheaply or better than its competitors.



## **Value Chain Approaches**

An approach is a method or a way of tackling an issue, a problem or a challenge (Approach, n. d.). The topic “value chain approaches” therefore simply means “value chain methods”. Often, approaches have their origins in philosophies or ideologies, politics or in so many other paradigms. To solve a particular problem therefore, there could be a number of equally effective approaches that can be used. These approaches could in practice be similar or dissimilar, slightly different or very different. As conceptual categorisation therefore, two main research streams in the value chain literature are distinguished in this study. These are the Filière approach and the conceptual framework elaborated by Porter in 1985. These two approaches are reviewed starting with the Filiere Approach followed by that of Porter in the following sections.

### **The Filiere Approach**

The ‘filière’ (filière means thread or chain) approach includes various schools of thought and research traditions (Purcell, 2008). According to Purcell, initially, the approach was used to analyse the agricultural system of developing countries under the French colonial system where the analysis mainly served as a tool to study the ways in which the agricultural production systems (especially rubber, cotton, coffee and cocoa) were organized in the context of developing countries. Purcell (2008) explained that in these contexts, the filière framework paid special attention to how local production systems are linked to processing industry, trade, export and final consumption. Purcell (2008) indicated that the concept of filière has therefore always encompassed a strong empirical

perspective which was used to map the flow of commodities and to identify agents and activities. The rationale of the filière, according to Purcell (2008), is quite similar to the broader concept of value chain though the filière mainly focuses on issues of physical and quantitative technical relationships, summarised in flowcharts of commodities and mapping of transformation relationship.

Purcell (2008) states that there are two strands of the filière approach which share some insights with value chain analysis. The first strand of the filière approach is the economic and financial evaluation of filières used in a number of French-funded development projects in the 1980s and 1990s. This focuses on income generation and distribution in the commodity chain, and disaggregates costs and incomes between local and internationally-traded components to analyse the spillovers of the chain on the national economy and its contribution to GDP along the “effect method” (“méthode des effets”).

The second strand of the filière approach is the strategy-focused analysis of filière, especially used in the university of Paris-Nanterre, some research institutes e.g. CIRAD and INRA and by NGOs e.g. IRAM working on agricultural development, researching in a systemic way the interplay of objectives, constraints and results of each type of stakeholder in the chain; individual and collective strategies are analysed, as well as patterns of regulations.

### **Porter’s Framework on Competitive Advantages**

According to Purcell (2008), the second research stream refers to Porter’s 1985 work on competitive advantage. He explained that Porter utilised the framework of value chains to assess how a firm should position itself in the

market and in the relationship with suppliers, buyers and competitors. He further explicated that the idea of competitive advantage of an enterprise can be summarised as follows: how can a firm provide to customers a certain good (or service) of equivalent value compared to competitors but at lower cost (strategy of cost reduction) and alternatively, how an enterprise can produce a good such as customers are willing to pay a higher price for getting such product (strategy of differentiation)?

### **Similarities and differences between the Filière and Porter's Framework**

The Filière and Porter's Framework are similar to the extent that they are both tools for analysis and are applicable to the study of agriculture production. Each can also be used for mapping exercises. Additionally, the rationale of the filiere is quite similar to the broader concept of value chain.

The filiere was intended for use as a tool for studying agricultural systems in developing countries. It basically has two components; one looks at economic issues whilst the other concentrates on the development and analyses of individual and collective strategies to solve challenges in production systems. On the other hand, Porter's original framework was meant for industries and companies and he used it to find out how an organisation should position itself for competitive advantage and also how to detect the sources of their competitive advantage. Porter's framework was designed to help maximise margins. The filiere is also excellent at helping to track commodities in a chain, observe the financial changes that occur and see how the benefits spread through the system.

This study viewed the cashew value chain through a combination of the part of the Filière that deals with the development and analyses of individual and collective strategies to solve challenges in production systems and Porter's framework which generally helps maximise margins. The following sections discussed the concept of value chain and its related factors.

### **Value Chain Analysis**

Value chain analysis according to M4P (2008), mainly aims at supporting management decision and executive strategies. In their view for example, a value chain analysis of a supermarket in Europe can point out that the competitive advantage of such a supermarket against its competitors is the availability of exotic vegetables. They explained that detecting the source of competitive advantage is valuable information for business purposes and following on such a finding, the supermarket enterprise is likely to increase the strengthening of the relationship with producers of exotic fruits and the advertisement campaign will pay special attention to such issues. In line with these thoughts about value chain analysis, Recklies (2001) also reckons that value chain analysis describes the activities within and around an organisation and relates them to an analysis of the competitive strength of the organisation. It therefore evaluates which value each particular activity adds to the organisation's products or services. This idea was built upon the insight that an organisation is more than a random compilation of machinery, equipment, people and money and only if these things are arranged into systems and systematic activities will it become possible to produce something for which customers are willing to pay a price.

According to Miller and Jones (2010), value chain analysis describes the activities the organisation performs and links them to the organisation's competitive position. They further state that similarly value chain analysis is a successor to the term sub-sector analysis and remains an important way of diagnosing a chain for determination of areas of weakness and intervention.

According to GIZ/MOAP (2006), value chain analysis is reasonably flexible and it can be analysed from the point of view of any one of the large number of actors in the chain. Value chain analysis can help design projects and programmes to provide support to a value chain, or set of value chains, in order to achieve desired development outcome, examples of which could include: increasing the level of exports, generating maximum employment, benefiting a particular group in society, using locally produced raw materials or concentrating development benefits in underdeveloped or disadvantaged regions of a country.

Despite the clear differences made between value chain and value chain analysis, opinion still seems to be divided among some development practitioners. Weitzenegger (2007) believes value chain and value chain analysis are the same. According to him, the value chain also known as value chain analysis, is a concept from business management that was first described and popularised by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. In his view, the concept has been extended beyond individual organisations and can therefore apply to whole supply chains and distribution networks. Weitzenegger concludes that the activities that

comprise a value chain can be contained within a single firm or divided among different firms.

Value chain analysis seeks to unearth the hidden advantages an organisation has over its competitors whether via lower production costs, superior price settings, the range of commodities offered and even which particular commodity to be highlighted plus the weaknesses and impediments in that organisation. Agricultural value chains concern commodity industries e.g. cashew industry, maize industry or the yam industry whereas value chain analysis is about and around a particular organisation. This research work was based on the concept of the agricultural value chain in order to study the cashew industry in the Brong-Ahafo Region.

### **Value Chain Development**

According to GIZ/MOAP (2006), value chain operators understand that they can access markets if they succeed to supply competitive products in a joint effort. They explained that the actors (input suppliers, farmers, brokers and processors) have to apply appropriate production and handling technologies, become business-oriented and understand each other as partners in the value chain for success. Value chain is competitive and its competitiveness depends on trust, cooperation and communication among actors. In their view, there are two approaches to identifying a value chain for development namely the Constraint Identification and Market Analysis Approaches which they explained as follows.

The Constraint Identification approach considers the problems the producer faces in marketing his/her produce as the starting point of the value

chain development. The producer identifies these problems and works towards solving them to enable him/her market his/her produce efficiently. On the other hand, the market analysis approach considers the evaluation of opportunities from the market perspective by assessing consumer demand as the starting point for value chain development. It is here the Theory of Constraints unites with the Value Chain concept to serve as the foundation upon which this research work stands.

### **Performance Enhancement Tools of the Value Chain Concept**

The value chain has been applied successfully to a number of business industries throughout the world ever since its creation by Professor Michael Porter of the Harvard Business School in the USA in 1985. The value chain, however, is very effective when applied with the support of a portfolio of essential business performance-enhancing tools. Some of these tools include value addition; continuous improvement; benchmarking; competitive advantage; and warehouse receipts. Literature is reviewed on each of these business-enhancing tools in the following pages to explain what they are and show their relevance to the livelihood improvement of cashew farmers in the cashew value chain.

#### **Value Addition**

Mohanty and Deshmukh (2007) expressed the view that there may well be a range of definitions as the customer expectations for value may vary from one market segment to another. Thus, value may be quality, exclusivity, convenience or possibly service response in it all, but the common denominator is cost to the customer. It is the general view, however, that value can be added to a product or

produce in a variety of ways. This can be directly or indirectly and that value can be added to a product to transform it; this can be by drying; value can also be added via transportation or even by storage.

Value addition is one of the ways to increase one's portion of the total margin in a value chain. In the production of cashew, there are several value addition activities (Keller, 2010). Many agronomic practices and cultural practices all add value to raw cashew nut (RCN) for the benefit of farmers. Value, for instance, is added to RCN when they are dried, another value is added when the nuts are bagged and also when they are transported. It is the total benefits from the value added activities which in part lead to the improvement of livelihood of cashew farmers.

Value is a continuum so on the other hand, when farmers do not invest sufficient time to dry their RCN properly, it leads to the growth of moulds thereby reducing the weight of acceptable stock. When farmers do not stockpile, they are unable to sell the RCN in bags and therefore lose the profits due to packaging, storage and transportation. Most farmers in Africa with insufficient or no market information sell piece meal to traders (Chilonda & Van Huylenbroeck, 2001). Große-Rüschkamp and Seelige (2010) firmly established this when they posited that favourable conditions for cashew marketing can also be increased by providing better market information and that for the farmers in particular, such an information system is of vital interest. Farmers, according to them, often sell to the closest buyers and traders without knowing about regional cashew prices. They then concluded that farmers' conditions (e.g. no storage and/or transport



facilities, hunger and therefore urgent need for cash) very often prevent them from selling elsewhere, but better information about prices would in some cases probably lead to higher revenues for them.

Value is added when the RCN is processed and also when it is packaged. The level of value addition is determined by the quality of the value addition activity. Hence, the type of packaging one selects helps determine one's earnings from the cashew value chain. If the product is well packaged, customers will be willing to pay more. Much more will also be paid by customers when they can for instance see well labelled products with evidence of traceability from processors (World Bank, 2016).

The effort to add value to what farmers produce has not really taken root in much of Africa. In Ghana, for example, farmers are generally not motivated by the system to supply quality produce because often traders are unwilling to make a distinction among grades or quality types and therefore do not pay extra monies to farmers who go the extra mile to supply top quality produce.

A similar thing happened in the maize value chain in Wenchi where a union of business support agencies IFDC/MUCG/Extension/Research formed a number of commodity clusters of farmers. Members of the maize commodity clusters were for instance taught to add lots of value to their maize by investing in quality seeds, using the right amounts of fertilisers and purchasing tarpaulins so they could dry their maize on them instead of on the bare ground. The farmers also put in other value adding activities such that eventually, the quality of their harvest was indisputably matchless on the local market. The maize market queens

at the Wenchi market unfortunately bought the trained farmers' quality maize at the same price as those of relatively poor quality and right before the trained farmers' very eyes, all the maize whether high quality or low quality was mixed and dried together.

Subsequently, the trained maize farmers have been unwilling to invest in the value adding activities. This notwithstanding, a conscious effort must necessarily be made by cashew farmers to embrace value-addition as a work style and a critical performance tool if they are to reap its benefits in order to impact their livelihoods positively. But before this can really work for cashew farmers, other relevant actors on the cashew chain must first be earnestly sensitised and extramurally educated through workshops and seminars preferably organised very close to where these other significant actors live and work (World Bank, 2016).

When seminars and workshops are regularly organised for actors in the cashew value chain, they will begin to appreciate quality by paying more for it. Value addition activities cannot be sustained if they are not paid for. Many of the actions taken in order to bring about change must necessarily be undertaken in tandem.

### **Continuous Improvement**

Many authors including Bessant, Caffyn, Gilbert and Webb (1994); Berling (2000); Boer, Kuhn and Gertsen (2000) (cited in Prado-Prado, 2009), defined continuous improvement as the planned, organised and systematic process of ongoing, incremental and company-wide change of existing practices aimed at improving company performance. According to IMAI (cited in Kerrin, 2002),

Personnel Participation Systems (PPS) such as suggestion systems, quality circles and improvement teams among others, stand out for their effectiveness in ensuring continuous improvement. IMAI further explained that external agencies such as customers and suppliers also provide a source of problems for the continuous improvement process and that joint problem solving between customers and suppliers is vital to a successful continuous improvement system.

It can therefore be concluded from the foregoing that to be able to practise the principle of continuous improvement, companies form and commission improvement teams and implementation teams. This is collaborated by Prado-Prado (2009) when the author stated that in organisations, an improvement team headed by an implementation team is responsible for proposing and analysing problems and implementing improvements that contribute to achieving the desired goal. The writer further explained that managers, supervisors and operators ‘walk around’ their plant looking for faults and improvement opportunities and once identified, they implement actions to solve problems. Similarly, when the cashew value chain in the country gets a Board, the Board will appoint teams whose responsibilities will include “walking around” the cashew value chain looking for faults and improvement opportunities and once identified, actions would be taken to solve them.

Continuous improvement efforts definitely lead to better ways of doing things at cheaper rates thereby maximising company profit margins. In a similar way, continuous improvement in the various activities of the cashew value chain

actors will lead to maximisation of margins that ultimately will lead to livelihood improvement for farmers.

### **Benchmarking**

According to Brach (2009), a benchmark may be defined as the predetermined level or standard which may embrace price, quality, design, efficiency and cost-effectiveness and that it is against this benchmark that all comparisons are made. Benchmarking embraces the process measurement into a cross-functional relationship. It incorporates all the elements in the global supply chain and has focus on the product specification, the operational performance, and the management practices as well as software solutions.

According to Mohanty and Deshmukh (2007), literature suggests benchmarking to be a method for continuous improvement that involves an ongoing and systematic evaluation and incorporation of external products, services and processes recognised as representing best practice. 'Method' in Mohanty and Deshmukh (2007) describes benchmarking as a management method or tool which is often used alongside other performance enhancement tools or philosophies such as total quality management (TQM) or competitive analysis. The compatibility between benchmarking and TQM creates a synergy which enhances the competitive advantage. Continuous improvement is clearly an integral part of benchmarking, and is a vital component in permitting flexibility for rapid response to opportunity. The philosophy of benchmarking is to create a change-oriented workplace culture, within which participative people-driven

approaches to benchmarking create an outward-looking, co-operative and responsive organisation.

According to Gattorna and Walters (1996) cited in Mohanty and Deshmukh (2007), benchmarking is a systematic, structured approach to search for best practice and that experience suggests that successful implementation occurs when a formal approach is adopted. In their view, organisations using advanced models retain the fundamental principles of benchmarking but adapt them to match environmental and internal changes that are ongoing and specific.

The definition of benchmarking is extended by Miller, De Meyer, and Nakanc (1992) in Mohanty and Deshmukh (2007) who suggest that strategic benchmarking provides strategic data and information that can be compared to similar information from other global manufacturing companies. Strategic benchmarking according to them, is just one of the several ways to benchmarking an activity that varies depending on whether a product, a process, customer needs or global strategies are being compared. They then describe four different types of benchmarking as product benchmarking; process benchmarking; best practices benchmarking; as well as strategic benchmarking and outline procedural steps for their implementation.

These four different types of benchmarking can be applied to the cashew value chain in the Wenchi and Techiman municipalities. Product benchmarking can be applied to the RCN produced by cashew farmers. Here, farmers will be informed by the demands of the market i.e. what customers want to buy so they will know exactly what planting material to go in for. Process benchmarking can

be applied to all the critical processes that need to be observed from value chain financing through land acquisition to plantation establishment. Best practices benchmarking will cover all the cultural practices that have hitherto been neglected for instance. Finally, strategic benchmarking will cover such areas as securing valued /high profile markets well in advance of harvest, preparation of enhanced composts and engaging cashew farmers in dialogue for production of organic cashew for instance.

When benchmarking is observed within the cashew industry, it will automatically engender continuous improvement that can lead to improvement of livelihoods.

### **Competitive Advantage**

According to Institute of Management Accounting (IMA, 1996), in order to survive and prosper in an industry, firms must meet two criteria: they must supply what customers want to buy, and they must survive competition. IMA also stated that a firm's overall competitive advantage derives from the difference between the value it offers to customers and its cost of creating that customer value.

When cashew farmers prepare and use enhanced compost to fertilise their cashew trees, they will create competitive advantage for themselves among their competitors. They will firstly avoid the purchase of expensive chemical fertilisers and secondly receive in payment higher rates per kg of RCN than those who use chemical fertilisers. The benefits will not only improve farmers' livelihoods but also positively impact other actors including processors along the value chain.

Processors on account of this, will announce to their clients that their products are organic for which reason they will receive higher premiums.

IMA confirms this when it states that competitive advantage in regard to products and services takes two possible forms. The first is an offering or differentiation advantage in that if customers perceive a product or service as superior, they become more willing to pay a premium price relative to the price they will pay for competing offerings. The second is a relative low-cost advantage which customers gain when a company's total costs undercut those of its average competitor.

### **Warehouse Receipts Programme**

Andrews, Munro and Field (2007) defined warehouse receipt as a certification of legal ownership of a particular commodity that is stored in a specific location and is of a specified quality and condition, such that when the commodity is sold, the buyer can have the comfort, without physical inspection, that the product they have purchased will be available to them when required, in the condition outlined on the warehouse receipt. Warehouse receipts have for some time been recognised as an important tool to provide the agricultural sector with increased flexibility in marketing decisions and also as a mechanism to obtain financing for farm operations.

Andrews *et al.*, explained that development practitioners and donors have pushed to have warehouse receipts used to provide benefits to smallholder farmers to enhance their participation in the broader market for agricultural products. They further stated that warehouse receipts are also an integral part of

the agricultural commodity exchanges as they allow trade to take place with “paper or receipts” rather than the physical commodity. The establishment and operationalisation of a warehouse receipt system improve livelihood of farmers (Coulter & Onumah, 2002). The following sections discussed the concept of livelihoods and related issues of extension education.

### **Livelihoods**

According to Chambers and Conway (1992), a livelihood comprises the capabilities, assets and activities required for a means of living. They stated further that a livelihood is sustainable when it can cope with and recover from the stresses and shocks and maintain or enhance its capabilities and assets both now and in the future without undermining the natural resource base. In the view of FAO (2007), livelihoods are ‘means of making a living’, the various activities and resources that allow people to live. There are many other definitions including for example, those by Young *et al.*, (2001) and Oxfam. Citing them, it stated that Young *et al.*, defined livelihoods as the ways in which people access and mobilise resources that enable them to pursue goals necessary for their survival and longer-term well-being, and thereby reduce the vulnerability created and exacerbated by conflict. Oxfam also according to FAO (2007), states that a livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from shock, maintain itself over time and provide the same or better opportunities for all, now and in the future.

So far, development workers the world over have accepted the two statements above made by Chambers and Conway (1992) as a definition for



livelihood. A critical analysis of the definition shows that a livelihood is the work by which a person makes a gain for one's self as a result of the judicious use of one's brains together with his or her technical skills (human capital) and social networks taking advantage of the natural, physical and political milieu.

Livelihood in the literature has been accepted as a concept with five original component capitals which Carloni (2005) defined as follows: Human capital (household members, active labour, education, knowledge and skills); Physical capital (livestock, equipment, vehicles, houses, irrigation pumps); Natural capital (access to land, forests, water, grazing, fishing, wild products and biodiversity); Financial capital (savings/debt, gold/jewellery, income, credit, insurance); and Social capital (kin networks, group membership, socio-political voice and influence). A sixth capital, known as Political capital (Baumann, 2000), has, however, been added recently and that seems to have been carved out of the Social capital. Political capital is defined as socio-political voice and the ability to influence decisions. According to FAO (2007), livelihoods assets encompass what people have and that these asset categories are interlinked for which reason no single category on its own is sufficient to yield all the many and varied livelihood outcomes that people seek.

According to Alinovi, D'Errico, Mane, and Romano (2010), livelihood outcomes are the goals to which people aspire, the results of pursuing their livelihood strategies. They further explained that livelihoods approaches stress the importance of understanding and supporting poor people's efforts to achieve these goals and stated that examples of livelihoods outcomes might include increased

income; reduced vulnerability; increased well-being; improved food security; and more sustainable use of natural resources. Alinovi *et al.* (2010), concluded that livelihoods outcomes are important because they help us understand the results of peoples' livelihoods strategies in a particular context; why people pursue particular strategies and what their priorities are; and how people are likely to respond to new opportunities or constraints. Similarly, according to Adato and Meinzen-Dick (2003), livelihood outcomes may be reflected in conventional indicators such as income, food security and sustainable use of natural resources, as well as a strengthened asset base, reduced vulnerability, and improvements in health, self-esteem, sense of control and maintenance of cultural assets.

Throwing further light on livelihood outcomes, FAO (2007) states that they can be categorised under three headings namely economic, biological and social. In its view, food and income security, that is, the ability to acquire sufficient food and income to meet basic needs is essentially an economic outcome. FAO further explained that mortality and malnutrition rates or levels are essentially biological measures of livelihood outcome. The UN additionally explained that dignity is an all-encompassing term that includes notions like choice and control over one's future, sense of self-worth and status and that it is clearly a social measure and as such is hard to quantify. The FAO then concluded that the right to life with dignity is one of the fundamental principles in the Humanitarian Charter but in the rush to respond to emergencies, people's dignity is often forgotten.

According to Krantz (2001), the concept of Household Livelihood Security (HLS) derives from the classic definition of livelihoods developed by Chambers and Conway in 1991, which embodies three fundamental attributes: the possession of human capabilities (such as education, skills, health, psychological orientation); access to tangible and intangible assets; and the existence of economic activities. Krantz further explained that the interaction among these three attributes defines what livelihood strategy a household will pursue.

According to Krantz (2001), there is the realisation that poverty as conceived by the poor themselves is not just a question of low income, but also includes other dimensions such as bad health, illiteracy, lack of social services, etc., as well as a state of vulnerability and feelings of powerlessness in general and that it is now realised that there are important links between different dimensions of poverty such that improvements in one have positive effects on another.

Livelihoods diversification shows up in the literature in the form of a critical strategy employed by rural communities as a means for coping with the stress of poverty. In the development literature of the 1980s, livelihoods diversification was known as the “phenomenon of multiple enterprise” (Long, 1984) of which one rural man could be a carpenter at one time, at another time, a mason, a farmer, a vulcaniser or a hunter consequent upon the seasons and the need to survive. Ellis (2007), defined livelihood diversification as the process by which rural families construct a diverse portfolio of activities and social support capabilities in order to survive and to improve their standards of living. According

to sustainable livelihoods research, diversity (i.e. the exploitation of multiple assets and sources of revenue) is an intrinsic attribute of many rural livelihood strategies (Patrizio, 2002). This assumption in Patrizio's view is consistent with findings of anthropological studies on the household economy of pre-industrial peasant societies, as well as with the concept of "integration" which (along with participatory methods) inspires the farming system approach.

Among the six capitals, financial capital happens to be the one which is frequently not easily accessible to the poor. The remaining five capitals can all be converted though to financial capital. The amount of financial capital available at any time to any cashew farmer can therefore be considered as the product of an inter-play of all the five assets.

Improved livelihood can thus be interpreted to mean improvement in a cashew farmer's income. This is understandable because if for instance the cashew farmer has good health, that means he is not going to spend financial resources on prescribed medical drugs. The improvement in income can therefore serve as an indicator for livelihood improvement. Writing in support of this, Adato, Meinzen-Dick and Suseela (2003) stated that livelihood outcomes may be reflected in conventional indicators such as income, food security and sustainable use of natural resources, as well as a strengthened asset base, reduced vulnerability, and improvements in health, self-esteem, sense of control and maintenance of cultural assets. According to Heinrich (2012), in Ghana, cashew production is considered as being of particular value for improving household

incomes, as the nuts are sold in the ‘hungry season’ when no other crops are available.

### **The Technical Link between Income and Livelihood**

Livelihood assets are a six-component construct, the components of which are human capital, social capital, natural capital, physical capital, financial capital and political capital. The components of human capital all come together to help the cashew farmer to generate income. Similarly, the components of social capital in the form of kin networks and group memberships help the cashew farmer to enhance his or her ability to increase income. The components of both natural and physical capitals also aid the cashew farmer to generate income. Financial capital, whether positive or negative adds to the income of the cashew farmer. Finally, the political capital also contributes to the growth of income of the cashew farmer when through a political voice the farmer together with others cry for better selling prices of their RCN and succeed in influencing decisions. From the analysis above, it can be concluded that all the capitals come together to determine the income of the cashew farmer. For this reason, income can conveniently be used as a proxy for livelihood assets or capitals.

According to Wongnaa (2009), assuming that the income of cashew farmers is used as proxy for their livelihood, it could be inferred that cashew production could help improve the livelihood or standard of living of cashew farmers. The improvement in livelihood resulting from cashew nut production could indicate that cashew nut production could help alleviate rural poverty.

## Evaluation in Extension

According to Scriven (1991), evaluation involves determining the worth or merit of whatever is being evaluated. Quite a number of important benefits can be derived from the value judgements of such operations, including financial accountability, social impact of programmes and projects as well as helping to redesign programmes or even create new ones for the future (Dart, Petheram and Straw, 1998).

Generally, there are two basic types of evaluation namely formative evaluation and summative evaluation (Scriven 1967). According to Dart *et al.* (1998), formative evaluation is conducted to provide programme staff with judgements useful in improving the programme and that summative evaluation is generally conducted after completion of the programme or when a programme has stabilised and for the benefit of some external audience or decision-maker. The main difference is that the aim of a summative evaluation is to report on the programme, whereas a formative evaluation reports to the programme (Scriven, 1991).

According to Dart *et al.*, (1998), worldwide agricultural R&D programmes are becoming more participatory in focus. They hold the view that new extension theories and methods such as those of Chambers (1983) who argued that research activities should begin and end with the farmer, are gaining acceptance. In Australia, similar concepts emerged during the 60s and 70s (Williams 1968 and Bardsley, 1981). According to Dart *et al.* (1998), the new emphasis is on adult learning, understanding existing farming systems, reflective practice of extension

workers as facilitators and a stronger focus on evaluation. To cater for this change in the culture of extension practice, new evaluation methods will have to be developed or adapted from other disciplines and concluded that these methods need to be participatory, creative, formative, empowering as well as aid decision making.

According to Dart *et al.*(1998), various attempts have been made to classify evaluation per se, some by categorising forms of evaluation by purpose (Owen, 1993), others by methodology (Stake 1973) and others by the position of the major audience (Worthen *et al.*, 1997). In their work of reviewing evaluation, Dart *et al.*(1998), settled on Owen's meta-model which uses a relatively straight forward framework for classifying evaluation approaches into five categories or forms based on purpose: evaluation for impact assessment; evaluation for programme management; process evaluation; evaluation for design clarification and evaluation for programme development.

Meta-model according to Dart *et al.* (1998), is a framework for describing or categorising various different approaches or forms of evaluation. In the view of Smith (1993), model is used with wide variability and considerable ambiguity in evaluation practice and literature. He also stated that generally, it refers to particular conceptions, approaches, methods and even loose theories for thinking about and/or conducting evaluations. In Dart *et al.* (1998)'s, review work, it is used to signify conceptual ideas based on particular paradigms of how an evaluation should be conducted. They claim that these models may be implicit or explicit: implicit in that they are carried around in our heads and based on our

common sense; explicit in that they follow a particular conceptual model of how evaluation should be carried out.

According to Dart *et al.*(1998), when studies were classified by means of Owen's five forms (Owen, 1993), a difficulty experienced was that studies could often be placed in more than one category, especially with regard to the time frame that Owen attached to the meta-model. Several logical frameworks are currently used in agricultural extension to help plan an evaluation strategy. These include Bennet (1975)'s hierarchy which is a seven-level ladder that conceptualises hierarchical levels of programme outcomes; the logical framework which is a hierarchy of objective statements regarding the goal, purpose, outputs and inputs; the Synder model which is a soft systems approach to evaluation; and the three-rings approach which differs from the other frameworks in that it recognises that other agencies and programmes may also have an impact on the target group. The next section discussed Bennett's Hierarchy in evaluating the impact of extension programmes.

### **Bennett's Hierarchy**

Bennett (1975) lists seven levels of goals in extension and it is more difficult to evaluate at higher levels of the hierarchy, as it becomes more difficult to show that changes at these levels are the result of extension activity and not of other factors (Dart *et al.* (1998). The original list of Bennett is presented as follows:

- Level 8           Consequences for society
- Level 7           Consequences for the target group



Level 6	Behavioural changes in the target group (Direct evidence, indirect evidence, product quality as evidence of change in behaviour).
Level 5	Change in knowledge, attitudes, skills, motivation and group norms (Proxy indicators of behaviour change).
Level 4	The farmer's opinion about extension activities
Level 3	Farmer's participation in extension activities (Participation monitoring)
Level 2	Implementation of the programme by extension agents (Activities monitoring)
Level 1	Programming of the extension activities (Inputs monitoring)

Dart *et al.* (1998) explained the levels stating that it is indeed the case that evidence of programme impact becomes stronger as the hierarchy is ascended and that evidence at the two lowest levels provides little or no measure of the extent to which clientele benefit from the programme. Level three merely provides one way of measuring possible opportunity for education to occur, while level four can provide somewhat better confirmation of whether given activities have been beneficial, but is less satisfactory than level five, Knowledge, Attitudes, Skills and Aspirations (KASA). Changes in KASA are considered to be merely stepping-stones to indicate the adoption of more desirable patterns of behaviour and that level five (evidence of practice change) is desirable when programme objectives include changing practice. Finally, assessing practice change is usually quite apart from assessing accomplishment of ultimate programme objectives and extension is often held accountable for the extent to which it is contributing to solution or

checking of overall problems. Dart *et al.* (1998) therefore concluded that an ideal evaluation of impact would probably be in terms of whether desired results are achieved plus any significant side effects.

Levels five and six, in my opinion are the most critical levels that bear evidence that indeed effective learning has taken place and farmers are acting in compliance or implementing stated objectives. Care, however, needs to be taken in offering explanations because two farmers could both indicate clearly that effective learning has taken place but one may implement the object of concern whilst the other may not. The reasons for not putting what has been learnt into practice at level six can be studied. A survey of the number of farmers willing to comply (Level 5) and the actual number that complied (Level six) will throw up those willing to comply but incapacitated one way or the other. A good search will be to trace those farmers and interrogate them to find out why they could not put their newly acquired skills into practice. When the impediments are identified and cleared from the path, it surely will allow the incapacitated farmers to also fly.

### **The Cashew Value Chain in Ghana: Empirical Evidence**

As a sequel to the introduction of the cashew plant to Ghana in the 1960s, a number of attempts were made to help improve the status of the crop. One of the projects with extra-ordinary impact was the Cashew Development Project, the appraisal of which was initiated in the year 2000. As a result of that project, there are currently throughout the cashew growing belt about thirty-three cashew clonal nurseries that are supposed to help farmers whether they want to establish

plantations or just for replacement of dead crops. For many decades in Ghana, cashew seedlings were raised by seed and this led to a lot of heterogeneity where yields varied widely among trees in the same plantation. The yield of some trees was uneconomical and something drastic needed to be done. Consequently, the Cashew Canopy Substitution Project was introduced in 2005. It identified trees that were below 18 years whose yields were unimpressive producing less than 8kg nuts per tree per year or bearing small-sized nuts less than 7gram per nut or both, de-topped them and grafted scions from trees of known high pedigrees unto them.

The Cocoa Research Institute of Ghana (CRIG) at Tafo-Akim teamed up with the Wenchi Agricultural Research Station in 2003 to undertake a research in which out of three hundred cashew assertions the Wenchi Station was able to select forty that were excellent. Clones were developed out of the forty selected trees for farmers. The Wenchi Research Station also established a scion bank for farmers' use from the forty selected trees. Further research work performed on the forty selected trees included Out-turn test, yield assessment test and disease resistance test. Since 2009, there has been a Genotype by Environment trial at the Wenchi and Bole Research Stations and it is expected that conclusions will be reached after six to eight years of data collection. In 2012/2013, a hybridisation project with local and Brazilian assertions was initiated at the Wenchi Agricultural Research Station. The project is still on-going. There are no recommendations yet because of a few challenges. Since 2015, seventeen of the forty selected cashew trees are being tried in the transition/Guinea Savannah zone.

Another project being undertaken is the Cashew Intercrop Project in the Guinea Savannah zone.

Also in the country, many farmers did not maintain the correct planting distances between cashew trees. This consequently led to avoidable losses in yield. To overcome the challenge, MoFA through the Extension Directorate introduced the Cashew Tree Coppicing Project that used top-working machines to cut back branches that had interlocked with the branches of other trees. The concept of value chains was introduced into the cashew industry with the view to help understudy and revamp it. Unfortunately, AEAs who could have helped with its implementation were not given much grounding in value chain concepts and their applicability. Massive transfer from the Wenchi Municipality of the few AEAs who received competency training in canopy substitution techniques after only one year of practice to other parts of the country brought the percentage success rate of canopy substitution from 71% in 2008 to 65% in 2009 (Boachie-Boadu, 2011). Many Business Support Agencies including ACA and ACi have since 2000 teamed up with the Ghana government to strengthen the cashew industry. ADF for instance sank a total of \$15.54 million into the cashew business in ten districts of Ghana with the view to increase living standards and generate employment.

### **Cashew Value Chain Development Processes: Status and Challenges**

The cashew value chain development processes are the cumulative means by which actors seek to expand the cashew value chain in respect of input/output quality and quantity, trade dynamics as well as the resultant total fiscal worth in a

functionally dynamic policy environment. In the Brong-Ahafo Region, the cashew value chain improvement processes cover seven critical areas namely cluster formation of actors; capacity building; sustainability of cashew value chain financing (VCF); Standards (input/throughput/output); technological operations (throughput); participation of cashew farmers in people inclusive markets; and finally, a functionally dynamic policy environment. The components of each of these constructs are discussed in the following paragraphs:

The components of cluster formation of actors include partnerships, networking and the benefits of economies of scale and cost cuts due to agglomerated supply (Maxwell Stamp Plc., 2013) while the elements in the capacity building of actors are empowerment; countervailing power development (Röling, 2004); literacy rate improvement programmes (Kapfudzaruwa, 2013); cashew market information sourcing skills; cashew marketing skills; and cashew price negotiating skills. The components of value chain financing are bankers and cashew farmers' understanding of each other's operational paradigms; commitments to uphold truth (GIZ/MOAP, 2006), trust, and fairness as well as show mutual respect to each other and banks' handling of cashew farmers' loan requests with dispatch since many farm activities are time-bound.

The elements of standards for input, throughput and output are quality concerns (GTZ, n.d) in respect of agro-chemicals; seedlings' pedigree; and customer satisfaction while those of technological operations (throughput and output) are approved soil types; recommended soil tests; purchase of cashew seedlings from approved nurseries; observance of correct planting distance;

coppicing (with top working machines); Canopy substitution; composting; application of compost to cashew plants; picking of RCN from fallen fruits; drying of RCN on tarpaulin; engagement in bulk sales of RCN.

The elements of participation of cashew farmers in inclusive markets include reducing high illiteracy rate among cashew farmers (Kapfudzaruwa, 2013); developing countervailing power in cashew farmers (Röling, 2004); improving market infrastructure (Kapfudzaruwa, 2013); insistence on price transparency (fair trade); overhauled price-negotiating mechanisms; transaction cost reduction work plans; understanding the significance of contracts (Bromley, 2011); and preparedness to access markets beyond the local level ((Kapfudzaruwa, 2013). The constituents of a functionally dynamic policy environment entail range of policy generation, enactment, application, regulation, review mechanisms, sanctions to curb premeditated violations and incentives for compliance (Spio-Gabrah, 2016).

The challenges facing the seven constructs described above are summarised as follows:

Some Business Support Agencies like ACA, ACi, IFDC and MUCG have mandates to form and establish commodity clusters including those of cashew in the Brong-Ahafo Region to train cashew farmers in value chain concepts. As a result of this, IFDC in collaboration with MUCG have so far formed some soya bean clusters, maize clusters and cashew clusters. The clusters are currently not vibrant though. According to a cashew farmer, farmers of the maize clusters for instance were sensitized on the need to avoid drying their maize on bare ground in

order to improve the quality of their produce. The farmers understood the concept, embraced it and invested some money in the purchase of tarpaulins on which to dry their grains. Their motivation was the fact that according to their trainers, MUCG/IFDC, they could have more money in their pockets if they dried their maize on tarpaulins. Unfortunately, their efforts were not appreciated at the Wenchi market. He further explained that at the market, farmers from the maize clusters received the same payments for their grade “A” maize as other farmers with relatively poor quality maize. According to him, the market queens were simply unwilling to pay more for quality maize thereby smothering the farmers’ enthusiasm and walking over their good efforts.

The BSAs that initiated the programme perhaps should first have sensitised the market women and their queens through training at workshops and seminars before training farmers to produce quality maize. Alternatively, ready markets could have been sought for grade “A” maize with organizations like WFP and Nestle Ghana for instance before getting the farmers to produce. This noble effort has since come to an abrupt end because of process thinking in exactitude. Unfortunately, the BSAs do not seem to have sufficient funds to undertake this assignment and it also seems there is no plan of work with well outlined activities and time lines for achieving anything at the moment. Government should have taken the lead for the BSAs to support but so far, government’s contribution to this programme is minimal if not totally non-existent.

Business Support Agencies like ACA, ACi, IFDC and MUCG that are supposed per their mandates to organise capacity building workshops and

seminars to train cashew farmers do not seem to have enough funds to go round sufficiently hence not many farmers have so far been trained in cashew value chains. Similarly, there is low government input towards this function and this is reflected in the extremely low number of capacity building workshops and seminars organised by the Extension service on yearly basis for cashew farmers. Worldwide, many such programmes have suffered ‘Donor fatigue’ (Lazzarini, 2013).

In respect of sustainability of cashew value chain financing, there are several problems for both cashew farmers and VCF operators (Business & Finance, 2007). These include low credibility on the part of farmers and ill-timed dispatch of loans by operators which together make cashew value chain financing quite unsustainable in the region (Langat, 2013). Similarly, in Nigeria, the banks and financial institutions do not support cashew farming and export of the nuts (Daily Trust, 2014).

The quality of inputs is a big challenge in the cashew value chain. Several spurious agro-chemicals for instance abound in the cashew industry (CropLife, 2012) and there seems to be no protection of farmers from them until recently when CropLife Quality Brand Project was introduced in Ghana.

According to CropLife Ghana (2012), CropLife is a regional federation representing the plant science industry and a network of national associations across the world and it is committed to sustainable agriculture through innovative research and technology in the areas of crop protection, non-agricultural pest control, seeds and plant biotechnology. The CropLife Quality brands carry



verifiable holospots the codes of which can be texted to a given cell number (or short code) to receive a reply message on the genuineness of the pesticide. According to CropLife Ghana (2012), between 15 to 30% of pesticides on the market are illegal or counterfeit.

In the Brong-Ahafo, technological operations in the industry are not yet among the best in the cashew producing countries. There is no vigorous and continuous search by farmers for instance for competitive advantage and continuous improvement. The literature search did not reveal any place in Africa where cashew farmers consciously pursue these agronomic and marketing virtues. Furthermore, because majority of cashew farmers are either illiterate or have very low educational backgrounds (Ghana Statistical Survey, 2014), even basic planting distances are violated with disastrous consequences later. Output quality is poor because most cashew farmers do not produce for any particular market niche (Farm Radio International, 2007). They have no special customers in mind whose requests they are trying to meet. Most of them therefore sell their RCN on as-is basis.

Cashew farmers in the Brong-Ahafo Region, like many farmers elsewhere, generally have low business acumen (Hellin, 2002) and low countervailing power (Röling, 2004). Illiteracy rate is very high in the region (Ghana Statistical Survey, 2014) and most cashew farmers have almost no knowledge about the opportunities people inclusive markets offer and how to participate in them. Technically, participation is either consultative or collaborative (CPRC, n.d). At best what pertains here in the Brong-Ahafo could conveniently be described as

consultative participation. Unfortunately, there is simply no collaborative participation of cashew farmers in people inclusive markets.

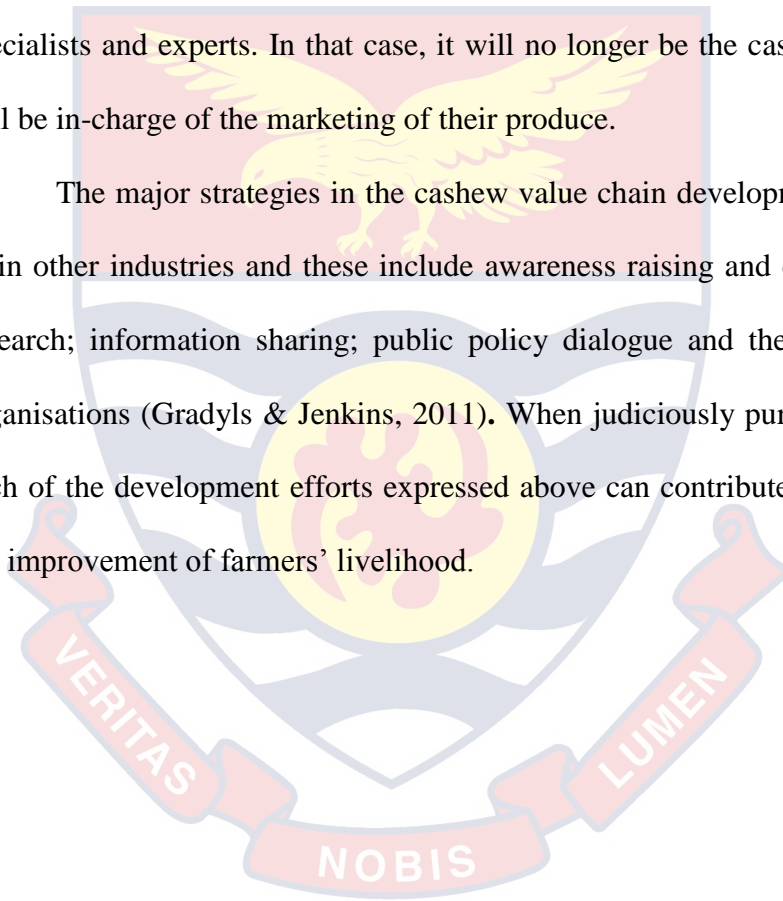
In conclusion, the status of the cashew value chain which is an inter-play of the level of growth of all the seven constructs mentioned above is low in the Brong-Ahafo Region with a very high potential though for development. This growth is guaranteed if sufficient funds will be committed to run the Operational Framework designed as an output of this research work.

### **The Potential Effect of Cashew Value Chain development on Cashew Farmers' Livelihoods**

When the cashew value chain is strategically improved and earnestly operationalised, prospective cashew farmers will automatically become beneficiaries of its numerous gains. Under such circumstances, potential cashew farmers will first be thoroughly briefed by extension to seek information about local and higher-value foreign markets to know what customers want and also find out the particular cashew assertions whose RCN offer the best trade premiums. This knowledge will technically influence the choice of seedlings the farmers will opt for. Such farmers will also not stay on their cashew farms waiting for extension services to be offered to them but instead will aggressively pursue extensionists to demand services. As they watch their cashew crops grow, they will meticulously employ all the approved cultural practices taught by the extension service. Such farmers will take advantage of the benefits of belonging to cashew commodity clusters in their zones of operation to benefit from the economies of scale; the possibility of participating in seminars and workshops for

cashew farmers to learn about production as well as marketing standards, contracts and ethics of the farming profession. Harvesting and after harvest management skills of such farmers will be top notch to assure excellent returns. Cashew farmers who operate fully under the directives of an operational value chain will see the critical need to influence their Cashew Association to entrust the marketing and sales of their output to the hands of competent commodity sales specialists and experts. In that case, it will no longer be the cashew farmers who will be in-charge of the marketing of their produce.

The major strategies in the cashew value chain development are the same as in other industries and these include awareness raising and capacity building; research; information sharing; public policy dialogue and the creation of new organisations (Gradyls & Jenkins, 2011). When judiciously pursued and applied, each of the development efforts expressed above can contribute its little quota to the improvement of farmers' livelihood.



## CHAPTER THREE

### MAIN ACTORS, SUPPORT SYSTEM AND STRENGTHENING STRATEGIES OF THE CASHEW VALUE CHAIN

#### **Introduction**

Chapter Three gives global insight into what is currently happening in the affairs of the main actors on the cashew value chain. The global insight is also into their service deliveries. The chapter breaks both the Support System and Strengthening Strategies into their respective components and sheds light on what is happening with a global perspective.

#### **Cashew Value Chain Actors and their General Activities**

The people and organisations engaged in the development of the cashew value chain are categorised into main/primary actors and indirect actors. The main actors of the cashew value chain are those that suffer the pain and the gain along the chain; those that embrace the debts and the profits consequent upon their direct investment in the cashew value chain activities". The main actors in the cashew value chain are input dealers; farmers; processors and traders (including bulkers or produce buying companies) and financial institutions. To sustain the cashew value chain, they each have roles they play as expressed below. Indirect actors are also available and they facilitate the operations along the cashew chain. The indirect actors are business support agencies made up of extension, research, tertiary institutions and international NGOs.

According to UNIDO (2011), the primary actors in the cashew value chain (those who produce, transfer and own products) are farmers, Primary Cooperative Societies (PCSs), regional cooperative unions, processors, exporters, roasters and retailers (including shops as well as roadside and street vendors). UNIDO further explains that in Tanzania, the service providers include the Cashew Nut Board of Tanzania (CBT), District Agricultural and Livestock Offices, government research and extensions services, financial institution such as CRDB and NMB, and NGOs (UNIDO, 2011). The following sections provided review of the key actors in the cashew value chain.

### **Input Dealers**

Input dealers along the cashew value chain are either large scale or small scale operators (Krausova & Banful 2010). Traditionally, input dealers appear at three spots along the cashew value chain. They appear first as planting material suppliers, then agro-chemical suppliers and finally as packaging material suppliers. Interestingly, there is a fourth dimension and that has to do with the supply of information as input along the value chain (Keller, 2010). Consequently, actors who consciously or unconsciously pass on agro-technical or marketing information are also input dealers though in a very special sense. Extension units, Research organisations, NGOs and traders who share information could therefore very loosely belong to this category too.

According to ACi (2010), in Ghana, the majority of cashew farmers experience severe difficulties in obtaining necessary inputs. ACi explained that though in most instances, the use of agro-chemicals for controlling pests and

diseases has become inevitable these are only implemented on a limited basis because they are either unavailable (e.g. due to untimely distribution) or unaffordable. They claim the existing distribution system is generally weak, and characterised by a lack of funds, unreliable suppliers, as well as weak and poorly developed rural infrastructure. These challenges may be a contributory factor toward a drift to organic cashew production in Africa alluded to by the Cote D'Ivoire Youth Reinsertion Opportunities Study (2006). Such a drift may smother the operations of agro-chemical suppliers in the cashew industry.

Currently, most agro-chemical input dealers who operate within the cashew industry in Africa operate on small scale basis. Their business in the cashew domain is not so vibrant because most cashew farmers do not see the need to fertilise their cashew crops for instance or spray them with insecticides (Krausova and Banful, 2010). According to Huis and Meerman (1997), most farmers in sub-Saharan Africa are resource-poor in terms of access to natural resources, credit, information and external inputs. In their view, these low-external input systems often operate near the optimum, but generally do not produce high yields. This is collaborated by Heinrich (2012) who postulated that the prevailing climate conditions in Ghana mean that cashew production is not very input-intensive. In the future therefore, when the idea of organic cashew production and its attendant benefits are firmly established in the production culture of cashew farmers, the work of these agro-chemical suppliers in the cashew industry will be virtually wiped out except in places like Mozambique

where according to Heinrich (2012), colder nights require agro-chemicals to reduce the potential damage that insects can cause.

## **Cashew Farmers**

### **Gender of cashew farmers**

Both males and females cultivate cashew throughout the entire cashew producing world, from South America through Africa to Asia (Blazdell, 2000). Pohlman (2012) also supported this statement when she stated that the cashew industry traditionally relies on the participation of both women and men in production. According to the World Bank, FAO & IFAD (2009), women face considerable gender-related constraints and vulnerabilities compared to men because of existing structures in households and societies. According to Pohlman (2012), male land sizes cultivated to cashew are often bigger than those of women and also many more males are reached by extensionists than females. This according to Pohlman is because in all the countries producing cashew, males dominate their extension systems. It is also the case that from the cultural point of view, male extensionists find it relatively more convenient working with male farmers. This subtle selectivity is even more pronounced in Muslim communities. In respect of agriculture programmes, wherever there is no conscious effort for gender mainstreaming, women tend to be at a disadvantage with a relatively lower influence of all services on their livelihood improvement.

According to FAO (2002), USAID (2009) and the World Bank (2007), women in general lack access to land, credit, information and other resources often as a result of unequal social and cultural beliefs and male-favoured policies

in statutory and customary law. In addition, women in rural environments face many constraints with regards to attending school and are less educated than men or women living in urban areas (World Bank, 2007).

### **Age of cashew farmers**

Age impacts on farming both positively and negatively (Heide-Ottosen, 2014). Minors as well as very old cashew farmers are not able to undertake hard work on cashew farms (Wongnaa & Ofori, 2012). It is the youth and middle-aged persons of both sexes, however, who contribute significantly to farm labour (Wongnaa & Awunyo-Vitor, 2013) and hence impact livelihood improvement positively. Experience generally comes by advancement in age and since constructive experience impacts positively on livelihood improvement, it implies advancement in age likewise impacts positively on livelihood improvement.

### **Education of cashew farmers**

Many farmers do not have high formal educational backgrounds throughout the cashew farming belt (Wongnaa & Ofori, 2012). A small number though have basic education whilst an insignificant number has secondary and tertiary education (Wongnaa & Awunyo-Vitor, 2013). Education is very important in modern farming particularly because of the kind of technologies available these days (Pudasaini, 1983). Education is known to make it relatively easier for educated farmers to adopt new technologies (Jamison & Moock, 1984). Education reduces farmer vulnerability in the domain of input dealers. Education assures countervailing power development in farmers and this helps them to negotiate relatively better farm gate prices with prospective customers than their



uneducated counterparts (Lockheed, Jamison, & Lau, 1980). Education impacts positively on livelihood improvement. Confirming some of the above points DFID (2002) stated that people need access to information regarding health, education and the market economy, so that they can engage critically with the issues of institutions that affect their everyday lives. DFID further declared that reading, writing and numeracy skills provide the vital link that can widen opportunities to improve rural people's livelihoods.

### **General Characteristics of Cashew Farmers**

Certain characteristics seem common among most cashew farmers in almost all the countries where cashew is produced in commercial quantities. These actors are often small-scale farmers who cultivate cashew as a supplementary crop (Keller, 2010). Both males and females cultivate cashew. Their land holdings are small (Dadzie, *et al.*, 2014), often below four hectares. In Tanzania for instance, the farm structure is dominated by small-holders cultivating an average farm size of 0.9 to 3.0 ha (Kledal and Kwai, 2010).

According to Azam-Ali and Judge (2001), in Tanzania, cashew is considered by small-scale producers to be one of their most lucrative crops and the work needed comes at times which do not conflict with peak labour times for food crops. Thus, in their view, it has the potential to increase earnings, create jobs and increase export. The period for harvesting cashew in Ghana (November to April) (Lowor & Agyente-Badu, 2009) also coincides with the time when most crops have already been harvested.

Throughout the world, most of the people who produce cashew are small scale farmers (Lowor & Agyente-Badu, 2009). Sahn and Sarris (1994) confirmed this. Cashew, according to the two authors, has been an excellent crop for smallholder production over the years in most places. Cashews were also recognised by a study of the agro-industry in India as a crop that is drought-resistant, easily processed locally, in need of little capital investment, able to employ a large portion of both rural and urban labour force, and lucrative especially for the processed end product (Meaney-Leckie, 1991).

The numerous small scale cashew farmers throughout the cashew producing regions of the world do not seem to have any significant bargaining powers (Evans, Mariwah & Antwi, 2014). For example, in 2007, producers in Southern Guinea-Bissau only received \$0.20 per kilogram for raw cashew nuts while one kilogram of processed cashews was being sold for more than \$4 in the United States (Boillereau, Adam & de Cock, 2007). Although processing adds a great deal of value, small cashew growers in Guinea-Bissau often have no interest in it since it is labour intensive with no international buyers looking for processed nuts in the country (Lekberg, 1996).

In analyzing the cashew value chain of Mozambique, Große-Rüschkamp and Seelige (2010) made profound statements relevant to most cashew producing countries. They claimed that no difference is generally made between good and poor quality raw cashew nuts and that some factories started to pay a premium for better quality raw material after an initial selection at the farm level, though no comprehensive quality system is in place. They concluded that prices vary

according to the season rather than to the quality of the product. Cashew farmers do not generally pursue quality because they do not see it to be beneficial to them (Keller, 2010).

The average yield in Mozambique according to Große-Rüschkamp and Seelige (2010) is between 2 to 4 kg RCN per cashew tree. This in their opinion is very low taking into consideration the fact that cashew trees between 10 and 25 years old have the potential to produce between 10 and 15 kg per tree. According to Graham, Kaboli, Sridharan and Teleghani (2012), African cashew producers are significantly less productive than their counterparts in India, Vietnam and Indonesia. They further stated that Cote d'Ivoire, one of the world's largest producers has yields that are four to eight times under that of Vietnam.

Große-Rüschkamp and Seelige also observed that cashew nuts are often smallholders' only cash crop and that the vast majority of smallholders in Nampula province in Mozambique are subsistence farmers. According to them, their only cash crop is therefore the cashew tree and for this reason the cashew tree plays a big role in their livelihood as small farmers. They again observed that the cashew harvest starts at the end of the dry season, which is the most crucial season for poor farmers' survival and that they use this chance to harvest the cashew nuts, sell them immediately and buy food with the revenue thereby confirming that cashew nuts are also important in terms of food security.

From the point of view of Große-Rüschkamp and Seelige (2010), there is lack of interest in replanting cashew trees among those smallholder farmers that do not see cashews as a commercial crop. According to these writers, in addition

to this is the fact that the smallest scale farmers do not have the financial means to buy seedlings and/or their family labour is insufficient to clear fields, dig holes, plant seedlings and take care of them properly. In the view of Große-Rüschkamp and Seelige, the absence of assistance by the Mozambican extension service is another reason behind the lack of interest in planting cashew trees, especially in remote areas.

Most cashew farmers do not apply any fertilisers, fungicides or insecticides (Evans, Mariwah, & Antwi, 2014) except in some countries in East Africa that experience cold nights where fungicides and insecticides are applied (Heinrich, 2012). They do not seem to appreciate the effect of fertiliser for instance on cashew. Even if they do, most of them do not have the financial strength to purchase them. Generally, many of them express no desire to seek alternatives or explore workable options like composting. Cashew farmers have a poor record with regards to keeping good cultural practices because apart from their labour, they often do not invest in observing any good cultural practices. In view of this, their yields are generally low (Huis & Meerman, 1997). Große-Rüschkamp & Seelige (2010) writing in support of this issue, stated that most smallholders do not consider their cashew trees as a crop to be cultivated, but instead just harvest or collect nuts to sell and for this reason no specific cultivation techniques are applied, which results in low yields.

Majority of cashew farmers are not up to date with information regarding high value markets (Boillereau & Adam, 2007). They are often in a hurry to sell off their produce to local buyers at prices that are not competitive (Heinrich,

2012). They do not seem to worry too much about this partly because they do not have sufficient market information that could whet their appetite and help defer their quest for instant gratification of their financial desires. Große-Rüschkamp & Seelige (2010) firmly established this when they posited that favourable conditions for cashew marketing can also be increased by providing better market information and that for the farmers in particular, such an information system is of vital interest. Farmers, according to them, often sell to the closest buyers and traders without knowing about regional cashew prices. They then concluded that farmers' conditions (e.g. no storage and/or transport facilities, hunger and therefore urgent need for cash) very often prevent them from selling elsewhere, but better information about prices would in some cases probably lead to higher revenues for them.

Cashew farmers generally do not show any interest to upgrade their operations (Große-Rüschkamp and Seelige, 2010). Across board, these small-scale farmers do not have high educational backgrounds (Wongnaa & Awunyo-Vitor, 2013). Apantaku, Oloruntoba, and Fakoya (as cited in Wasihun, 2010) in an empirical study, found low educational status of farmers in a study conducted in Nigeria as a result of which extension was not much effective. Majority of them do not even have any idea about the yield potential of the cashew tree when best cultural practices are employed. In the main, cashew farmers use family labour for some of their work (Keller, 2010; World Bank, 2016). Confirming this statement, ACi (2010) states that most of these producers rely on family labour or hired labour especially for weeding and harvesting activities. They generally have

no proper storage facilities and no transport facilities as confirmed by Große-Rüschkamp & Seelige above.

According to Heinrich (2012), in Ghana, cashew production is considered as being of particular value for improving household incomes, as the nuts are sold in the 'hungry season' when no other crops are available. Cashews, Heinrich claims, can therefore assume a critical role in food and income security which includes the use of cashew income for the purchase of critical inputs for food crop production. She stated, however, that in comparison with other West African countries such as Côte d'Ivoire or Benin, Ghana's cashew sector, responsible for about 1% of global RCN production is a relatively small player and less advanced in fulfilling its potential.

According to Heinrich (2012), while increasing market prices and demand have made it more attractive for smallholders to engage in cashew farming, little knowledge of good agricultural and post-harvest practices in particular limit their possibilities to increase cashew productivity and to produce the quality of nuts required to access international markets. Such improved practices in her view, have the potential to increase yields by about 20-30% while requiring relatively little investment, but labour. According to Heinrich (2012), however, experience in the year 2011 suggests that increases could be as high as 65 to 100% for those farmers who fully adopt good agricultural practices. This way, the current average yield of about 3 to 6.5 kg per tree in Ghana (ACi, 2010,) could be increased to a competitive yield of 12 to 15kg per tree. According to Heinrich (2012), the Ghanaian cashew value chain lacks structure and organisation. Quoting from the

ACi September 2011 edition, Steering Committee Meeting Documentation Annex: 58, Heinrich (2012) stated that cashew farmers are very fragmented, which contributes to the fact that about 68% sell their cashews individually to village buyers thereby foregoing the higher prices they could obtain by selling in bulk through farmer Associations. A disturbing characteristic of cashew farmers is that they cannot be trusted to keep contracts. They disregard whatever arrangements they make with earlier buyers once a new buyer comes on the scene with a better price.

Bromley (2011) confirmed this observation when he declared that the market for cashews is indeed a rather contentious affair. According to Bromley (2011), often, when traders enter into forward contracts with cashew farmers, farmers will renege to sell to others at a slightly higher price. He further stated that this practice is evidence of agricultural markets that remain unsophisticated, pointing to a pressing need throughout West Africa.

Bromley (2011), explaining generally from his interactions with local professionals stated that cashew farmers report being seriously constrained by low and fluctuating prices, the high frequency of bush fires, high cost of inputs, exploitation by cashew traders/exporters, the absence of processing facilities for both cashew nuts and apples, and relatively bad roads from farms to all-weather roads.

When the issue of some farmers not keeping their word regarding forward contracts is juxtaposed with the exploitative tendencies of some cashew traders, it sheds light on the underlying challenge. Truthfulness, loyalty and transparency

which are part of the foundation blocks for good business and lasting relationships among actors are absent from the trade that generally goes on in the cashew value chain. Right from the onset, the farmer suspects that the trader will hand him a raw deal by pressing hard to buy his produce at rock bottom price. The so called “negotiated price” often turns out to be much against the will of the farmer whose very poor negotiating skills are stretched beyond reasonable limits in the negotiating process. Consequently, when another trader offers a better price later, that farmer feels rather justified that indeed the first customer cheated him so s/he walks out of the earlier contract without feeling guilty of any offence. Both attitudes of producers and traders are wrong and need correctional measures with strong underpinnings in business ethics of fair trade.

Many researchers have written extensively about the key characteristics of small scale farmers in respect of their usual land size, labour, technology type, resources, production capability and capacity to handle harvests in various value chains including those of cashew. The land size cultivated by small scale farmers in most parts of the developing world, particularly in Africa, measures between one and four hectares. The labour available to such farmers is often household-based (Keller, 2010; World Bank, 2016) and they depend heavily on them because they often cannot afford to pay labour charges (Evans, Mariwah & Antwi, 2014). For this reason, many of their households are classified as large families. In very critical situations though, a few of them are able to hire outside labour under various reward systems.



Small scale farmers use minimum technology in their daily work (Kalusopa, 2005). This is as a result of low educational backgrounds (Ortmann & King, 2007) coupled with their inability to afford them. Many small scale farmers often have an extremely low capacity for storage. This is encouraged by the fact that they sell their produce piece meal instead of bulking them. As small-scale farmers, they generally have poor marketing skills (Ortmann & King, 2007). Many small scale farmers are excluded from processing (Chilonda & Van Huylenbroeck, 2001) because they do not seem to have time and the resources to carry out that function (Chilonda & Van Huylenbroeck, 2001). The level of technology needed to engage in functional and effective processing is way above most cashew farmers' current capabilities. The low level of education exhibited by most of them coupled with their poor financial capacity is responsible for blocking them from reaping the higher dividends available in processing. It is generally the case that small-scale farmers as producers are vulnerable in all value chains.

### **Production of Cashew**

The production of cashew is by both male and female farmers. They prepare the fields, purchase seeds or seedlings, plant and transplant them and then nurture them. The farmers make several choices in cashew production. They each have to decide the size of the field, what type of planting material to use, whether seeds, grafted or clonal seedlings of known high pedigree. The farmer, based on his knowledge level decides the planting distance to observe. Those who squeeze extra plants onto their fields pay dearly later because their actions lead to

interlocking canopies. The cashew plant bears fruits on the peripheries of its canopies and wherever canopies interlock, there is no fruiting. Eventually interlocked canopies result in low yields. Many cashew farmers in Africa often have no idea how much each cashew tree is capable of producing per year. The maximum is between 1500 to 1600 kg per hectare and these have been attained in Vietnam and India (Khumbanyiwa, Dosso, & Kasalu-Coffin, 2000; Keller, 2010) whereas in Africa what has been achieved is about 450kg. In confirmation, Graham et al. (2012) affirmed that Ghana more than doubled yields to 450kg/ha from 2000 to 2006. Zandbergen (2015), writing under Chain Point's 3S Sustainable Cashew Supply Chain on the topic Farm & Crop Management, stated that higher quality and increased productivity on cashew farms will lead to a higher income for the farmers, and thereby to a better livelihood.

The International Trade Centre (ITC) (2013), a service organisation set up by WTO and the UN to offer assistance in trade and export to developing countries across the globe made several observations about the cashew trade and industry. ITC (2013), writing under the caption "Export Impact for Good", indicated that cashews are grown in Africa, Latin America and South East Asia and according to estimates from the World Bank, around 97% of the world cashew production comes from wild growth and small farms, while the remaining 3% comes from planned plantations. According to ITC (2013), while the ECOWAS region has experienced in recent years a drop in both the production of cashew nuts and its market share, it is still ranked as number-one export region of cashew nuts. It further stated that in 2010, the region's market share of exports

was 42.9% with a value of US\$ 151.5m and of the ten ECOWAS countries, Nigeria is the biggest producer of cashew nuts. ITC (2013) stated that the world's biggest producer of cashew nuts is Viet Nam which in 2010 produced 958,000 MT of cashew nuts, while its nearest 'rival', India, produced 695,000 MT. Nigeria, ITC stated, came third with a production of 580,761 MT whilst the position for the biggest importer of cashew nuts is held by Viet Nam.

ITC declared that the 2010 list of the top fifteen producers of cashew (in MT) in the world includes eight African countries, six South East Asian countries and only one from Latin America. The countries according to the ranking were: Viet Nam (958,000), India (695,000), Nigeria (580,761), Côte d'Ivoire (246,383), Brazil (220,505), Indonesia (145,000), Philippines (111,993), United Republic of Tanzania (79,100), Mozambique (67,846), Guinea-Bissau (64,653), Benin (49,487), Thailand (38,184), Ghana (35,647), Malaysia (10,335) and Kenya (8,381). The top five cashew nut producing countries in the world as at July 2012 are Vietnam, Nigeria, India, Cote d'Ivoire and Brazil (FAOSTAT data, 2012).

There are numerous production challenges in Africa. Many farmers cultivate small land holdings (Uwagboe, 2006) and do not observe the requisite agronomic cultural practices hence their yields are very low. In Mozambique and some other East African countries, many of the cashew trees are old and therefore economically unproductive but their owners are unable to replace them. Heinrich (2012) explained that the cold weather in Mozambique and Tanzania during some parts of the year makes it difficult to engage in cashew production without the use of insecticides and fungicides. According to Heinrich (2012) labour for harvesting

is getting very expensive all across Africa. Not many farmers have taken advantage of the high premium paid for organic cashew because obtaining certification for that status is very expensive and difficult to achieve. In Mozambique, according to Chipembere, O'Reilly, Laumans and SNV (2010), most families have an average of 20 to 100 trees.

According to them, most of the cashew trees are very old (over 40 years) and the average annual yields of these trees are very low, only 1-3 kg, generating only US\$ 50 - 100 per family per year. Many farmers in Africa produce cashew as a secondary crop (Jalid, 2017) and a smallholder crop (Wongnaa, 2013; GIPC, 2018) and do not therefore spend much effort nurturing it (Heinrich, 2012). In Ghana, cashew is harvested between February and April when most crops have been harvested already and the monies realised from them spent. Ugbajah (2014) confirmed this from his work in Enugu State, Nigeria when he stated that cashew exploitation is mostly experienced between the months of February to April, at the peak of the dry season in the study area. In India, the main harvesting season is from February to May (Rao, 1998). Cashew therefore is very important in the farming systems of the areas where it is cultivated and has great potential to improve farmers' livelihood assets particularly their financial and social capitals.

### **Scale of Production**

Scale of production of cashew has a relationship with livelihood improvement. The higher the scale of production, the higher the impact on livelihood improvement. Most cashew farmers only farm small land sizes (Dadzie, *et al.*, 2014) throughout the cashew producing belt from Latin America

through Africa to Asia. The situation is no different in the Wenchi and Techiman municipalities. Throughout the cashew producing belt, high scale of production generally means increasing the land size rather than productivity. In support of the fact that scale of production can have positive influence on livelihood improvement, Mamadou & Moreau Ousmane (n.d) proposed improving Guinea's production and marketing of cashews to increase incomes and improve livelihoods of smallholder farmers who typically own one to five hectares of land.

### **Cashew Processors**

Cashew processors throughout the world are generally classified as either small scale or large scale. One of the leading cashew processors in India and Vietnam is Rajkumar Impex Private Limited, a cashew processing concern that enjoys the advantage of global presence and expertise in obtaining quality raw cashew nuts, processing them with the state of the art machinery to churn out ready-to-chew nuts of international repute that are sold on the global market. At the moment, this business concern collects its raw cashew nuts from, East Africa and West Africa, Indonesia and Vietnam because of their characteristic quality.

From the company's website, the following accounts were gathered about the owner, the company's vision and values as well as their facilities. The main countries Rajkumar Impex sends their products to include Australia, Egypt, France, Germany, Italy, Israel, Japan, Korea, Russia, Thailand, The Netherlands, USA, UAE and UK. The company processes around 100,000 MT of raw cashew nuts in a year and was expected to register a growth in its processing efficiency to 130,000 MT by the year 2010-11. Rajkumar expanded his business strategically

in a phased manner and the entire business in India and Vietnam is professionally managed by a team of experienced professionals under the leadership of Rajkumar.

Rajkumar commissioned a first generation fully mechanized cashew processing unit in Tuticorin, Port City of India under one roof to process 200 Metric Tons of raw cashew nuts / per day and to produce best quality cashew in a much hygienic way without much human touch. With an objective to optimize the output from cashew processing and in sync with the company's belief of "No waste of value", Rajkumar set up a Cashew Nut Shell Liquid (CNSL) plant (next to the fully mechanized cashew processing unit in Tuticorin, India) with a capacity to crush 140 metric tons of Cashew shell per day to extract CNSL which is a versatile product used in polymer based industries for the production of friction linings, paints and varnishes, rubber compounding, laminating resins, foundry chemicals, polyurethane based polymers and epoxy resins.

### **Global Operations of a Large-Scale Processor**

Rajkumar's vision is to process cashews in all the cashew producing countries. In keeping with this vision, a new cashew processing factory belonging to Rajkumar Impex has been established at Techiman in the Brong-Ahafo Region of Ghana. From Rajkumar Impex documents, globally, Rajkumar processes more cashews than anyone else: 8-10% of the global crop and 20% of Africa's and hoped that by 2014 the conglomerate could process 18% of the global total. The Techiman factory is one of Africa's few fully mechanised processing plants, drying, roasting, shelling and grading some 50 tonnes of raw nuts a day.

According to The Economist (October 19, 2011), the African Cashew Alliance (ACA) has stated that African farmers grow about 40% of the world's cashews, but only around 10% of the crop (less in the west, more in the east) is processed in Africa and that the Alliance wants the African continent to process 35% of its own raw nuts by 2020.

According to company documents, Rajkumar Impex has invested \$9m in the Techiman factory and intends to open factories in Benin and Côte d'Ivoire, and maybe another in Ghana. The company is also expanding in southern and east Africa, buying a factory in Mozambique and hoping to build one in Tanzania. Locals, as well as Rajkumar Impex, stand to gain from the Techiman factory which is to employ 1,000 people, 90% of them women.

#### **Small-Scale Cashew Processors**

According to Asam-Ali and Judge (2001), cashew processing methods have improved considerably over the years. They hold the view that difficulties in shelling cashew nuts are due to the irregular shape of the nut, the tough leathery outer shell, and the Cashew Shell Nut Liquid (CNSL) within the shell that must not be allowed to contaminate the kernel during its removal from the shell. Azam-Ali and Judge (2001) explained that an early method used to remove the CNSL in cashew producing countries was to burn the raw nuts for a short period in order to burn the shells and the CNSL without affecting the taste or appearance of the kernel. According to them, this was a delicate operation requiring an experienced processor to gauge the length of time required for burning. In their view kernels

produced using this method are only suitable for either home consumption or for the local market.

The two authors have further stated that collection of CNSL in sufficient quantities can be economically advantageous though it is unlikely to be collected by very small-scale processors, due to the high cost of the specialised roasting equipment required for its collection. They concluded that manual shelling is still relevant to the small-scale processor, although a close look at mechanical options is recommended in all cases.

Findings from a study of cashew processing machines conducted by Fitzpatrick (2011) on behalf of GIZ shows that the sector is beginning to develop into a modern industry. According to the report, developments in processing have been driven by costs including labor investment and working capital needs for processors which are rising. In the view of Fitzpatrick, food safety, security and traceability are driving change in the industry and that these come with mechanisation needs. He stated that the mechanisation trend will as a result continue making new demands on processors. According to the author, the Cashew processing equipment market has developed into a large market with a wide range of equipment and prices. Fitzpatrick indicated that Vietnam is the leader and most developed market. He stated emphatically that there are no government trade barriers in the sector but suppliers are reluctant to do business in Africa. In the view of the author, because they see it as a high risk area, the African sector is served by a narrow base of suppliers. He lamented that the processing equipment market lacks competition. According to Fitzpatrick,



Brazilian suppliers can however offer equipment solutions for small and medium processors in Africa.

Many other significant points including the following were made by Fitzpatrick in the ACA report. According to him, processing remains a relatively small scale activity in Africa where the “steam and cut” model has been the right choice and is used in almost all processing units on the continent. He stated that management of new equipment is poor, labour problems are the major concern of processors especially in East Africa and that working conditions in cashew factories remain poor. Furthermore, the ACA report prepared by Fitzpatrick stated that challenges for African small and medium processors include lack of information on equipment and suppliers with their biggest obstacle being poor financial services. As a whole, according to the report, processors lack expertise in processing equipment and skills in procurement strategies. It further declared that they buy machines to solve labour problems but end up with machine problems and for this reason processors need technical support in machine management techniques and procurement strategy.

According to the ACA report prepared by Fitzpatrick, an India national study compiled as part of a global study concluded that processors could be divided into three groups in terms of their equipment and processing organisation as follows: old style processors utilising the manual processing and semi-automatic machines not linked together into a process system; new style processors who have upgraded using the new machines in a semi-automated process; and advanced processors who have introduced fully automated plants.

The ACA report revealed other interesting points that include the fact that the cashew factories of the kind usually found in African countries are small and local. As such, opportunity to benefit from technology transfers from related companies is very limited. The author further explained that processors are unable to afford professional expertise even if available. He also stated that the nature of many of the cashew companies in African countries means that the founder, the entrepreneur remains the decision maker on all issues including issues in which he or s/he has no expertise like new technology. Fitzpatrick's study revealed that a number of the cashew processing factories which were visited in the course of the study have poor understanding of the machines which they have already purchased.

Apart from the categorisation seen in India, two other types appear in the literature. Whilst the Indian classification is based on both equipment type and the ways by which cashew processing is generally organised, there is the East African typology which is based purely on the stages or levels of cashew processing engaged in by an organisation. Specifically, in Tanzania for instance, there are two levels of processors where the first level processors only engage in processing of cashew nuts up to the level of de-shelling before peeling. This type of processing can be outsourced to certain operators while second level processing requires more rigorous application of hygienic standards (UNIDO, 2011).

The second level processing starts with the peeling of cashew nuts reaching out till sorting and packing. Second level processors, when they do not outsource, engage also in first level processing. According to the third type, in

general, processors can be categorised into small, medium and large scale processors. Small scale processors produce for local market while medium scale to large scale processors produce for local, regional and international markets (UNIDO, 2011).

The African processors often operate to serve local demands (Boillereau & Adam, 2007). They are most times unable to purchase enough RCN to last the whole year. The employment they provide to their employees is therefore often seasonal. In both East and West Africa, the period for their engagement coincides with the end of the dry season hence there is competition between farm labour for instance and labour in the processing companies.

With the establishment of hi-tech processing facilities like the one belonging to Rajkumar Impex in Techiman, Ghana, it is only a matter of time before all the local processors are smothered through stiff competition. What is happening in Cote D'Ivoire lends credence to this cautionary statement. As reported in the Cote D'Ivoire Youth Reinsertion Opportunities study of Cashew Value Chain Analysis (2006), all the Ivorian processors are competing with the Indian buyers for the purchase of their raw nuts on the national market.

The local processors may need to very quickly find a niche to ensure their survival. They may perhaps have to take the lead to organize organic plantations and pay farmers monies far above what the hi-tech processors will ever be willing to pay. This may help to guarantee their stay in the cashew industry. The competition will not be easy for the local processors since Rajkumar Impex for instance has indicated it wants to eliminate middlemen so it can deal directly with

farmers and pay them handsomely. The local processors may also specialise in supplying the local market which indeed has great potential.

In Tanzania, one finds that the linkages between cashew farmers and cashew processors are rather weak and limited to interactions during the cashew buying season (UNIDO, 2011). Elsewhere in the region though, the situation is quite different as shown by the following account. According to Graham, Kaboli, Sridharan, and Taleghan, (2012) in 2001, USAID and Technoserve worked in Mozambique with a local entrepreneur to refurbish a cashew processing plant so that it could begin production. Graham *et al.*, explained that the plant bought raw cashews from several sources, one of which was direct from small farmer associations and growers. According to them, the plant worked with these growers to improve their yields, increasing their income by an average of 20% through cutting out middle men. They further hinted that this entrepreneur then provided support for other cashew processing plants, growing the sector from one to five plants in three years. These plants continue to provide support to farmers through supplying them with seedlings, teaching them quality control measures, and improving yields. According to the authors, in 2004, processors realized that farmers still needed a significant amount of assistance to improve quality and yields but to provide these services alone would be too costly for any individual firm, so they collaborated and each put in equal investments into a firm that provided technical assistance to farmers at a small fee.

## **Cashew Traders**

Traders in the cashew industry are made up of the Produce Buying Companies and their agents. Cashew Farmers' Associations in various countries also play the role of traders when they receive from their members and sell to exporters. Furthermore, RCN traders or exporters should be encouraged to assist in the provision of inputs to farmers, e.g. credit (ACi, 2010).

In Cote D'Ivoire, trading at the village level is mainly in the hands of the numerous traders who are buying the produce on behalf of the Indian exporters. There is currently no decree related to the agreement of these traders so they are always in the position to trouble the raw cashew nut market in the country (Cote D'Ivoire Youth Reinsertion study (2006).

## **Financial Institutions**

According to UNIDO (2011), financial institutions in Tanzania play a substantial role in the cashew value chain and with Government guarantee the National Microfinance Bank and CRDB Bank have been providing credit to primary cooperative societies for procurement of cashew nuts from farmers. UNIDO also claims processors are requiring loans for buying products and capital investments but access to financial products has been reportedly rather difficult.

A number of financial institutions have not yet succeeded in finding how best to relate to small scale farmers including cashew farmers (Keller, 2010). Consequently, not many financial packages have been designed and developed to help cashew farmers throughout the world. There is the need to strategically promote Value Chain Finance (VCF) to help cashew farmers out.

### **Value Chain Finance (VCF)**

According to Miller and Jones (2010), value chain finance is an evolving term that has taken on a range of meanings and connotations. In their view, the flows of funds to and among the various links within a value chain comprise what is known as value chain finance. Put another way, Miller and Jones explained that it is any or all of the financial services, products or support services flowing to and/or through a value chain to address the needs and constraints of those involved in that chain, be it a need to access finance, secure sales, procure products, reduce risks and/or improve efficiency within the chain.

According to Miller and Jones (2010), value chain finance offers an opportunity to expand the financing opportunities for agriculture, improve efficiency and repayments in financing and consolidate value chain linkages among participants in the chain. Miller and Jones (2012) further state that value chain finance refers to both internal and external forms of finance and they describe these two as follows. In their view, internal value chain finance is financing that takes place within the value chain, such as when a supplier provides credit to a farmer or when a lead firm advances funds to a market intermediary while external value chain finance is financing from outside the chain made possible by value chain relationships and mechanisms; for example, when a bank issues a loan to a farmer based on a contract with a trusted buyer or a warehouse receipt from a recognized storage facility.

In the view of Pelrine and Besigye (2007), provision and recovery of credit is not a simple task. According to them, the lender will always face

challenges of choosing the right borrower, financing the right business and recovering what has been loaned at a profit. They further stated that agriculture is often the most difficult sector to lend to because the lender's understanding of the business is often limited and information for making lending decisions is often difficult to come by.

The views expressed by Pelrine and Besigye come from conventional thoughts. In support of this assertion, Shwedel (2007), in Miller and Jones (2010) stated that conventional thinking is that the agricultural sector is too costly and risky for lending. According to them, however, major banks in the sector such as Rabo Bank and Banorte which are large financial institutions in the Netherlands and Mexico respectively, both express the view that agricultural credit is profitable if producers are well integrated into a viable value chain. This underscores the importance of tightly aligned value chains. According to Boehlje, Hofing and Schroeder (1999), forming more tightly aligned supply chains requires skills or competencies that may not be part of the traditional production and distribution systems in the agricultural industries and that one means of determining what skills are important is to study the successful supply chains in other industries. In their view, as a logical follow-on to the core competencies needed to form successful supply chains, there are some critical barriers that may make it difficult if not impossible to be successful in the formation or functioning of more tightly aligned supply chains in the food production and distribution industry. They further stated that these barriers or constraints are not impossible to overcome, but must be mitigated if more tightly aligned supply chains are to be

successful. According to them, some of these barriers include mutual trust by chain participants; communication and information flow across chain participants; and a policy environment that does not constrain or limit chain formation.

### **Cashew Extension Education**

Extensionists also called Agricultural Extension Agents (AEAs) of the extension domain are the main people responsible for teaching and training farmers (Badii *et al.*, 2015) throughout the cashew production belt. They train farmers using various adult teaching methods (Belay & Abebaw, 2004). The training and education take place during interactions on the farmers' fields, during field days; market days; at seminars and workshops. Regarding training and education in cashew production for cashew value chains, the AEAs do not seem to have the requisite skills. The educational information regarding cashew cultivation must be obtained from research. When the communication channel between extension and research lacks a two-way status, AEAs are unable to receive the research information that they could pass on to farmers. AEAs do not have sufficient information on value chains so they are unable to help farmers position themselves strategically along the cashew value chain to increase their margins. AEAs are able to train farmers in some of the cultural practices but not all. Not many AEAs for instance know practically how to produce enhanced compost in fourteen days as opposed to the orthodox method which takes minimum three months. If they do, they certainly would help farmers parade the corridors of competitive advantage to minimise their production costs and at the same time maximize their yields. If AEAs will design programmes that will



ensure farmers learn and apply the basic principles of Integrated Pest Management (IPM) and organic farming, these will help bring many farmers out of poverty and transform lives. A worldwide review of extension services shows that the impact of extension services on rural livelihoods is mixed: very high rates of return in some cases and negligible achievements in other cases (Rivera, Qamar & Crowder, 2001; Anderson & Feder, 2007).

In relation to its role in rural livelihoods, agricultural extension encompasses the entire set of organisations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods and well-being (Birner *et al.*, 2006). Apart from AEAs who educate and train cashew farmers, university faculties of agriculture that are linked to cashew value chains also train farmers. International NGOs that work in cashew value chains likewise train AEAs' and processors. Sometimes processors also train farmers directly or hire trainers to do so on their behalf (Graham, Kaboli, Sridharan & Taleghan, 2012).

Educated and trained farmers are relatively better able to accept as well as use production technologies and thereby improve their livelihoods. In line with this knowledge, UNESCO (2000), states that providing skills training is one major way of improving the livelihoods of poor people. Uwagboe and Adeogun (2010) also confirmed this. According to them, it is generally believed that farmers' level of education would enhance their farming activities and level of awareness. They further surmised that low level of education could affect farmers' receptivity of improved technologies and could be the reason why most

of the farmers in their study area depended heavily on the use of local varieties of cashew. According to Adato, Meinzen-Dick & Suseela (2003), knowledge and skills are often required to properly make use of many new technologies.

### **Cashew Research**

Agricultural research is undertaken by researchers of agricultural research institutions. The type of research so far conducted in the developing world by these researchers is often not research for development but one for enhancing the researchers' own academic ambitions. The research undertaken by them is not pro-poor farmers and is supply-led instead of being demand-driven (Gonsalves, 2005). The results of demand-driven research have dynamic transformative power for changing farm activities.

Research in the cashew value chain has so far concentrated on production. This in itself is a weakness in the cashew value chain because equally important is marketing research, the absence of which for instance has caused many hard working farmers to remain perpetually poor. In the scheme of affairs, who is to conduct social research to find out the kind of relationships that exist among the actors of the cashew value chain? Who is responsible for conducting research to find out how information travels along the chain? Who is responsible for researching into what things could keep members of cashew commodity clusters together? Who will conduct research to find out why farmers are not extending their cashew farms that easily?

While plant breeders appear confident that the current germplasm stock, if properly maintained, is adequate to produce steady yield growth over the next 20-

50 years (Knudson, 1999; Frisvold & Condon, 1998), there is widespread concern that this genetic stock is depreciating. Of particular concern is the status of the collections of the Vavilov Institute in Russia, one of the largest collections in the world which is facing critical financial and structural problems (Zohrabian, 1995) as cited in Metz *et al.*, (2000).

Metz *et al.*, further claim that many studies have considered the public good aspects of genetic resources and that naturally occurring plants are not considered patentable inventions. In their view, genetic resources are easily transported and replicated, making it difficult for a country or individual to exclude others from their use. They explained that this discourages private actors from making investments to preserve and collect genetic resources and to screen them for their potential usefulness. Metz *et al.* expressed concern regarding the fact that intellectual property protection historically has been weak for biological inventions. According to them, while patents on mechanical processes date back hundreds of years, intellectual property rights (IPRs) for commercially developed seed varieties began only this century, and remain considerably weaker than other forms of IPR protection.

In the view of Metz *et al.*, the evolution of increasingly strict IPRs for biological inventions and advances in hybridisation has stimulated private R&D in plant breeding. They noted that the progeny of hybrids has substantially lower yields and this naturally deters purchasers of seed from regenerating new seed for their own use or for resale. They also observed that the requirement that farmers repurchase seed annually greatly increases returns to private plant (seed) breeders

and that while public R&D investment has slowed considerably in recent years, private R&D has grown substantially. In conclusion, Metz *et al.* cited an example from the United States where according to them, private plant breeding research more than quadrupled in real terms between 1970 and 1990.

Using propensity score matching as a means of establishing a valid counterfactual and single differencing to measure impact, a study by Mapila, Kirsten and Meyer (2011) concluded that agricultural research interventions that are driven by agricultural innovation system concepts have the potential to positively impact upon the livelihood outcomes of rural smallholder farmers in Africa. Adato, Meinzen-Dick and Suseela (2003), however, have proved that research impacts livelihoods both positively and negatively. They found out in their study that agricultural research and technologies can reduce vulnerability, such as when irrigation reduces susceptibility to fluctuations in water supply, or when pest control technologies reduce vulnerability to crop or animal loss. They further stated that research and technologies can also increase vulnerability, e.g., when new varieties are more susceptible to crop failure if conditions are unfavourable. Additionally, according to them, if hybrid seed has to be purchased regularly, this can increase vulnerability where sources of cash are not secure.

### **Business Support Agencies (BSAs)**

In Ghana, Business Support Agencies include organisations like the Agricultural Extension Services Division of the Ministry of Food and Agriculture, international NGOs like ACA and ACi, IFDC, local NGOs like ADRA, particular faculties of some universities like the Methodist University College Ghana and

research institutions. According to UNIDO (2011), in Tanzania, the existing extension services that were supposed to reach farmers were inadequate, erratic and discontinued. UNIDO further stated that in consequence, farmers lacked information that would have enabled them to improve their production, apply proper agronomic techniques, apply pesticides in the right dose, be productive and produce cashew nuts efficiently and be able to run cashew nut production as a viable commercial business.

Even though in most places in the developing world it is anticipated that the development of value chains would be steered by the private sector, this can never be successful without collaboration and harmonisation from appropriate and significant business support agencies. Some International NGOs in fulfilment of their mandates for instance, offer advisory services. They sometimes practice pluralism when they operate as vital technical coordinators to bring relevant local stakeholders together in various projects. Specifically, International NGOs in the spirit of extension pluralism are able to put together functional teams that help establish commodity clusters for farmers. In some cases, they generally build the service delivery capacities of local non-governmental organisations and help improve their range of services offered. Some other jobs international organisations perform for local NGOs include the following: teaching them to write business plans and winning proposals; helping with the establishment of functional agro-production bases, agro-processing units and the development of critical job procedures; improving their fund-raising capabilities; linking local groups to good external markets; strengthening them in governance matters;

streetism; girl-child issues; monitoring and evaluation. Technical assistance offered by an International NGO can cover areas such as quality and sanitation standards and marketing information (Heinrich, 2012).

From the executive summary of the case study of ACi by Heinrich (2012) which focused on Ghana, the following is what he wrote to further throw light on the activities of international organisations. According to Heinrich, the global demand for cashew kernel has been growing at about 7% p.a. for the last decade, yet African smallholders have not benefited much. He stated that the constraints to growth are well known and include low productivity, poor quality and limited processing capacity. This case study documents the progress of the African Cashew Initiative (ACi) since 2009 in addressing the constraints and enabling growth, with a focus on Ghana as one of its programme countries.

Heinrich (2012) stated that the ACi is an exciting programme in many ways covering five different countries overall, including Ghana, Côte d'Ivoire, Burkina Faso, Benin, and Mozambique, with an aim to achieve large-scale impact. Specifically, he explains, ACi is committed to achieving a 50% increase in productivity and additional annual income of at least US\$100 for 150,000 cashew farmers, tripling current processing volumes, and creating 5,500 jobs in the processing industry by 2013.

From Heinrich's introduction to the report, he threw more light on some of the works of ACi. According to him, linking African smallholders and processors to growing international agricultural commodity markets is a promising avenue to increase incomes, create jobs and foster economic growth. He further explained

that the African Cashew initiative (ACi) is a multi-stakeholder programme that has embarked on the effort to promote competitiveness and poverty reduction by developing the cashew sector and increasing global market linkages of five African countries. Heinrich stated that as part of its activities in Ghana, the ACi for instance seeks to increase the volume of cashew production through increased productivity and it also seeks to achieve a better price for the farmers through improved nut quality and bargaining position of the farmers. Heinrich declared that consequently, the ACi trains public extension officers in areas such as harvest and post-harvest handling who then pass on the knowledge to farmers. He finally explicated that in a few thematic areas such as kernel quality for example, the ACi's staff also trains farmers directly.

### **Regulatory Change**

Worldwide, there are a number of regulatory certification varieties in the food industry to which cashew belongs. These certification brands have become necessary to ensure suppliers comply with rules and regulations to assure the general safety of consumers. FAO and other international bodies have their certification brands. FAO for instance introduced the Hazard Assessment and Critical Control Points (HACCP) which is the international benchmark concerning the cashew nut industry. With regards to Environmental Standards, there is ISO 14000 concerning pesticides in shell. Also available are specialist standards and certifications for access to niche/premium markets like Fair Trade, e.g. Fair Trade labelling organisations and International Organic Standards Certification (Caroko, Praputra & Santosa, 2013).

According to Harilal, Kanji, Jeyaranjan, Eapan and Swaminathan (2006), trade associations such as the Association of Food Industries (AFI) in the United States and the Combined Edible Nut Trade Association (CENTA) in the UK have a very important role in setting norms and rules of quality and commerce. AFI, for instance, they claim, has prepared detailed specifications for the cashew trade and they are also key dispute settlement institutions, settling commercial disputes through arbitration rather than in the court system. CENTA, according to Harilal *et al.*, deals primarily with disputes over non-compliance with contracts and the quality of merchandise delivered against contracts. They explained, however, that arbitrators are chosen mainly from among leading importers or roaster/salter companies, implying that the dispute settlement mechanism is biased in favour of the lead firms located at the downstream nodes. In the view of Harilal *et al.*, it is cumbersome and costly for the exporters/processors in India to seek justice through the existing arrangement while on the other hand, lead firms in the UK also find it difficult, costly and time consuming to settle disputes through the regulatory mechanisms in countries like India. They explained that when market prices are on the increase, the default is more likely to be at the suppliers' end and when they are going down, it is more likely to be at the buyers' end. Furthermore, food industry giants are adding stricter standards of their own in their bid to gain consumers and protect their reputations (Dolan and Humphrey, 2000). Retailers and food processors are held responsible and accountable for maintaining a wide range of quality and safety standards and in some cases, social



and environmental norms, although the latter tend to be voluntary codes of conduct (Barrientos & Dolan, 2003).

According to Harilal *et al.* (2006), at present, importer contracts with suppliers invariably dictate the shape, colour and size of the nuts; their moisture content and ensure that nuts are free from odours, mould, disease and decay, physical (moisture, brittleness), chemical (e.g. rancidity) and microbiological changes (e.g. Aflatoxin). Harilal *et al.* again state that in addition, importers are aware that there is considerable outsourcing of processing and that it is highly unlikely that HACCP or minimum hygiene standards are followed in that process. In their view, if traceability were to become more important, following the general trend in food industries, there would have been a challenge given that raw nuts are sourced from many different countries, and different states within India.

Apart from the international regulations which ensure customer protection and satisfaction, there are local rules and regulations which ensure value chain actors comply with set local conditionalities (ACA, 2013). Whenever changes are announced in regulations, rules or laws by means of governmental edicts or those of governments' representative regulatory bodies, there are bound to be either positive or negative corresponding cost implications. These occurrences can either collapse a business or enhance its operations. Erratic changes in transportation charges for example, can frustrate lots of businesses including those in the cashew value chain. In very turbulent and unpredictable environments as the case is in most cashew producing countries in Africa, cashew trade generally faces difficult regulatory risks. The strict observance of food regulations by cashew farmer

groups helps them to sustain their supply of goods unto the international commodity exchange platform where selling prices are relatively better. Such efforts guarantee improvement in farmers' livelihood.

### **Building Infrastructure**

WTO (2013) has observed that donors and partner countries agree that inadequate infrastructure is the main barrier to developing countries' participation in value chains. This according to WTO is largely reflected in aid-for-trade practice, with a preponderant share of aid spent on infrastructure.

In all the countries that produce cashew, it has been the responsibility of central governments to build thoroughfares, particularly feeder roads to serve the purpose of the cashew value chain. WTO, writing under "Building Trade Capacity", stated that some programmes, particularly those involving infrastructure, require significant funding. Storage facilities needed for implementation of warehousing receipts programmes in some instances become joint projects between governments and international NGOs. Governments generally provide water but sometimes they are aided by international NGOs. Throughout the cashew producing belts, electricity in the main has generally been provided by central governments. There is however evidence that in India and Ghana, some processors have on their own provided electricity.

A critical dimension of a value chain is the information flow across the chain (Boehlje, Hofing & Schroeder, 1999). Information flow is made largely possible by telephony. The literature search did not reveal any of the cashew actors as being involved with the building of this component of infrastructure.

Port facilities are very crucial for the development of the cashew value chain. The literature search, however, also failed to yield any results of cashew value chain actors being involved in its development. Governments have been responsible for its development in all the countries where cashew is produced.

Social infrastructure derives from the formation and establishment of cashew commodity clusters, farmers' societies, unions and associations plus all other networks within the cashew value chain. Business Support Agencies like extension units/departments of agricultural ministries, agricultural faculties of universities, and international NGOs have so far been generally responsible for building social infrastructure in the cashew value chain. In Ghana for instance, the Wenchi Agricultural Research Station has also been found to be involved in the formation and establishment of cashew, maize and soya commodity clusters. In a kind of pluralistic extension, the said research institution is part of a group of Business Support Agencies made up of the International Fertiliser Development Corporation (IFDC); the Department of General Agriculture and Agribusiness of the Faculty of Applied Sciences in the Methodist University College Ghana (MUCG) and the Wenchi Municipal Extension Department of the Ministry of Food and Agriculture. Chronic under-investment in social infrastructure among others, can impact negatively on rural areas to bring poverty (Duncan (2001)).

According to World Trade Organisation (WTO) (2004), poor transport infrastructure or inefficient transport services are reflected in higher direct transport costs and longer time of delivery. WTO (2004) also stated that an improvement in a country's infrastructure can make a big difference to the costs

of trading. WTO (2004) further explained that the quality of transport infrastructure affects trade in that poor quality infrastructure increases total transport costs as it increases direct transport costs and the time of delivery. In the view of WTO (2004), anticompetitive behaviour and restrictive regulations increase transport costs, thus raising actual trade barriers between countries and ultimately increasing costs of traded goods and market shares. The disadvantage in terms of reduced efficiency, lack of competitiveness and forgone gains from trade of countries with poor road infrastructures is substantial (WTO, 2004). Bad infrastructure for example is estimated to add an average of 15 percent to the production costs of beer in Cameroon and also makes “just-in-time delivery” impossible (WTO, 2004).

The development of infrastructure contributes positively towards the improvement of cashew farmers’ livelihood. The commodity clusters are for instance able to take advantage of the economies of scale to reduce member farmers’ production costs. They are able to win contracts the requirements of which no individual cashew farmer is able to meet at any one time. Good road infrastructure also helps to reduce transaction cost thereby helping to improve farmers’ livelihood.

### **Business Model Innovation**

The International Institute for Environment and Development, writing under the topic Business Models for Sustainable Development, stated that two broad areas for possible adaptation and innovation of a business model are production and marketing (IIED, 2010). The institute explained that the

production side comprises the set of activities, mechanisms and relationships for providing a good or service — in other words, ‘creating value’ while the marketing side comprises the activities, mechanisms and relationships for selling that good or service - in other words, ‘capturing value’. The institute further explains that market-based activities are now recognised by governments, business and development agencies round the world as potential solutions to major sustainable development challenges – reducing poverty, enhancing livelihoods, protecting ecosystems, tackling climate change, and meeting the Millennium Development Goals.

Wunker (2014) defines the business model of a company as its formula for sustained success which eventually becomes deeply ingrained in the organisation. He explicated that this is reflected in who the firm hires, how it measures performance, who it targets as customers, the standards it creates for budgets, and how it views competitors. Wunker further elucidated that indeed, the business model must permeate the firm in this way if the company is to become better at executing this formula than its competitors and concluded that when a company is well-aligned around a business model, it repeatedly wins battles fought on that turf.

According to Weitzenegger (2007), the business model innovation concept has been extended beyond individual organisations and can apply to whole supply chains and distribution networks. He explained that by exploiting the upstream and downstream information flowing along the value chain, the firms may try to bypass the intermediaries creating new business models, or in

other ways create improvements in its value system. In regard to the kind of changes that can occur in organisations, Weizenegger made a number of observations. According to him, industries sometimes evolve, gradually allowing moderate changes to be made while others change so much that new models are inevitable. He explained that such drastic changes come with their challenges and to surmount them, firms need to be proactive about rigorously defining the business model they have today and map how that model might have to change in various future scenarios.

Weizenegger suggested that the company can then plot its transition, building new capabilities bit-by-bit and testing new models thereby allowing change to become more strategic and manageable. In his view, this process begins with a rigorous de-construction of the current model, including clearly stated strategies (e.g. customers targeted) and norms (acceptable gross margins) and that management can then discuss which aspects of the model are easily changed, which are threatened by industry evolution, and what inter-dependencies exist. According to Weizenegger, companies subsequently need to relate their future strategies to the new business model required for their success and once the firm has laid out the potential components of a new business model, it can decide how to sequence its transition to new approaches. He hinted that seldom would a company want to change many variables at one time in the core business and likened it to building a plane while flying it emphasising that it is dangerous. He advised that instead, the firm may opt to create a separate business unit to try a radically different model, or it might enact small-scale experiments

within the core business. Weizenegger declared that development agencies need to promote the innovation of products and business models.

As indicated in the above viewpoints, Weitzenegger stated that “By exploiting the upstream and downstream information flowing along the value chain, the firms may try to bypass the intermediaries creating new business models, or in other ways create improvements in its value system”. Similarly, when farmers make the effort to exploit upstream and downstream information flowing along the cashew value chain, they may to a very large extent succeed in eliminating a number of middlemen and this will be to their advantage. Such a move will eventually bring about a change of the cashew value chain business model.

Again as shown by Weitzenegger, “industries sometimes evolve, gradually allowing moderate changes to be made while others change so much that new models are inevitable and that such drastic changes come with their challenges”. From all indications, the changes in the business model of the cashew industry must be gradual thereby avoiding the associated challenges that accompany drastic changes. This notwithstanding, it will also be prudent to clearly capture the current model and map how the model might have to change in various future scenarios. In plotting the anticipated transition, the necessary future capabilities and capacities that are recognised at the moment can be developed gradually. An overhaul of the cashew value chain, no matter how gradual this might be, will necessitate a rigorous de-construction of the current model as indicated above to hi-light strategies and norms. This will evoke

discussions on which aspects are most vulnerable or threatened by industry evolution.

According to the literature, “once the firm has laid out the potential components of a new business model, it can decide how to sequence its transition to new approaches” and that “seldom would a company want to change many variables at the same time in the core business”. Similarly, the strategic innovations that will bring poverty to its knees in the cashew value chain may have to follow this example judiciously.

The following sections now review literature on two of the variables mentioned in the conceptual framework of this study. This is undertaken with a view to unearth all critical challenges in the cashew value chain that might need careful adjustments, partial or complete redesign through well thought-out innovative strategies. Broadly the variables which number three are: I) Actors and their roles ii) Support System and iii) Strengthening Strategies. Literature has already been reviewed on cashew farmers and their roles in previous sections.

### **Support System for Cashew Value Chain Development**

The support system for cashew value chain development generally includes availability of inputs; infrastructure; and policy regulations. Literature is reviewed on the impact of each of these components on the improvement of cashew farmers’ livelihood.

#### **Availability of Inputs**

The components of availability of inputs include cashew industry knowledge and skills; Extension as an information service delivery apparatus;



capital; raw materials; and market. They are taken one after the other to see how from literature they present in Africa generally and in Ghana particularly and how they impact livelihood improvement for cashew farmers.

### *Cashew Industry Knowledge and Skills*

Cashew industry knowledge and skills are quite critical for development of the cashew value chain. They generally fall into three components namely, input sourcing knowledge; production knowledge; and marketing/sales knowledge. In Africa generally, input sourcing knowledge is provided by extension and some NGOs as well as colleague farmers. Within the cashew industry, the information shared by extension and NGOs covers recommended seedlings of known pedigree, selection and usage of insecticides, fungicides, weedicides and chemical fertilisers. Despite these efforts to educate cashew farmers, a number of them continue to fall prey to charlatans who sell spurious chemicals to them. Colleague farmers sometimes supply information to one another.

Production knowledge officially is generated by the research sub-system and passed on to the farmers' sub-system through the extension sub-system. Some farmers, however, obtain their production knowledge through colleague farmers. In a research work undertaken in Nigeria by Agbongiarhuoyi, Uwagboe, Ibiremo, Olasupo and Aigbekaen (2015), majority of respondents obtained cashew planting materials from fellow farmers and their own farms and got information on cashew cultivation from fellow farmers. In the cashew industry, production knowledge regarding correct soil depth for proper plantation establishment, seedling pedigree

selection and correct planting distance are very technical and any errors concerning them can be disastrous because the effects are not realised immediately but rather after the plantations have established. When no soil tests are conducted for instance to ascertain the soil depth, development of roots can be severely hindered by iron pans leading later to lodging of several mature cashew trees at the slightest rain storm. When a farmer chooses the wrong pedigree, his harvest will always be low regardless of any subsequent efforts. A desire to have many more cashew trees per hectare than what extension recommends for instance brings woes to farmers at the time when they should be rejoicing. The canopies of mature cashew trees in crowded plantations interlock and sadly, wherever they do, no fruits are borne thereby reducing yield significantly.

Canopy substitution is used by extension to convert poor yielding cashew plants to excellent ones. Coppicing or serious cutting back of all interlocked branches also helps to improve the low yield of cashew plants. There is, however, no remedy for plantations cited on shallow soils underlain by hardpans.

Sometimes in the Brong-Ahafo region of Ghana, some farmers intentionally transplant cashew seedlings closer than the recommended distances. They initially get big harvests and when the canopies are about to close, they cut down the extra trees for sale as fuel wood eventually leaving the plantation with the recommended planting distance. Cashew industry knowledge and skills when applied correctly by farmers impact positively on livelihood improvement. This is collaborated by 3ADI (2011) when it stated that application of knowledge and skills in cashew value chain leads to livelihood improvement.

### *Extension as an Information Service Delivery Apparatus*

The definition of extension has not been easy over the years because different countries and professionals have different definitions for it. According to Leeuwis and van den Ban (2004) for instance, extension is a series of professional communication interventions amid related interactions that is meant among others to develop and or induce novel patterns of co-ordination and adjustment between people, technical service and natural phenomenon in a direction that supposedly helps to resolve problematic situations which may be defined by different actors involved. Maunder (1973) defined extension as a service that assists farm people through educational procedures in improving farm methods and techniques, increasing production efficiency and income and bettering their levels of living. Adams (1982) sees extension as an assistance to farmers to help them identify and analyse their production problems and to become aware of the opportunities for improvement. Röling (1988) defined extension as a professional communication intervention deployed by an institution to induce change in voluntary behaviours with a presumed public or collective utility.

Extension is used as an information service delivery apparatus. It has been used over the years as a tool for facilitating agricultural and rural development (Chambers, 1997; Alex & Byerlee, 2002). In developing countries, Extension organisations play quite an important role (Shackleton *et al.*, 2000; Mwabu & Thorbecke, 2001). By its objectives, Agriculture Extension exists to bring sustainable development to farming communities. This it does through changing of farmers' knowledge base, attitudes, practices and skills; carrying farmers'

challenges and problems over to research; and also bringing research findings to farmers. In recent years, extension organisations are gradually redirecting their focus from agricultural productivity to sustainable development where the human dimension of agricultural and natural resource management are given prominence (Röling, 1994; Scoones & Thompson, 1994).

The FAO recommended Agricultural Extension Agent (AEA) to farmer ratio is 1:500. A few years ago in Ghana, that ratio was 1:3000 and of the total 2,068 AEAs only 279 representing 13.5% were females (PFAG/SEND, 2012). Agricultural Extension Agents (AEAs) particularly in the developing world are basically charged with the responsibilities stated above. The degree to which these tasks are performed, however, is dependent on an inter-play of factors including specific country mandates; leadership skills of managers; logistics especially transportation; as well as monitoring and evaluation. In most of Africa, to which Ghana is no exception, each of these factors has very debilitating add-ons. Apart from face-to-face teaching of farmers on their farms, they are also supposed to be taught through workshops, seminars, exhibitions, field days, on-farm demonstrations etc. Unfortunately, across Africa, there is a general shortage of AEAs (Belay & Abebaw, 2004; Donkor *et al.*, 2016). Additionally, in view of governmental fiscal inadequacies, there is prevalence of logistical shortfalls affecting the availability of such things like transportation, especially motorbikes and fuel for running them (Feder, Willett and Zijp1999). There are always inadequate budgetary provisions for continuous running of seminars, workshops and exhibitions and farmers do not therefore get the necessary training they need

from extension for continuous improvement of their knowledge base, attitudes, practices and skills. When extension teachings are embraced by farmers, they impact their livelihoods positively.

### ***Financial Capital***

According to Kolmar and Gamper (2002), financial capital denotes the financial resources that people use to achieve their livelihood objectives and it comprises the important availability of cash or equivalent that enables people to adopt different livelihood strategies. They stated that two main sources of financial capital can be identified as available stocks (comprising cash, bank deposits or liquid assets such as livestock and jewellery, not having liabilities attached and usually independent on third parties); and regular inflows of money comprising labour income, pensions, or other transfers from the state, and remittances, which are mostly dependent on others and need to be reliable). Kollmair and Gamper further explicated that among the categories of assets, financial capital is probably the most versatile as it can be converted into other types of capital or it can be used for direct achievement of livelihood outcomes (e.g. purchasing of food to reduce food insecurity) and concluded, however, that financial capital tends to be the asset least available for the poor thereby making other capitals important as substitutes.

Generally, financial capital for farming is not easy to come by in Africa though some banks have been set up specifically to look after the interests of farmers. Many banks do not understand the mindset of farmers while many farmers also do not understand the mindset of banks. Agriculture for most part is

time-bound. Farmers put in applications for loans to banks and the granting of such loans often comes at the wrong time when the activities for which the loans were requested might have passed. When loan requests are not granted timeously, farmers collect the said loans but find other uses for them which make repayment extremely difficult if not impossible. Consequently, a great number of banks shy away from lending to farmers because they consider that transaction to be too risky. A few banks though in the developing world understand the circumstances of farmers and therefore grant them loans. Some of such banks are located in Tanzania and Mozambique. Rabo Bank in the Netherlands is also one such bank that comes to the aid of farmers as indicated earlier in this document. In Ghana, the Agricultural Development Bank (ADB) has been established specifically to grant loan facilities to farmers. Livelihood improvement is generally assured more often than not when financial capitals are made available in the right amounts and at the right time to cashew farmers.

### ***Raw Materials***

The raw materials in the cashew industry include agro-chemicals and seedlings. In Tanzania and Mozambique, there are government nurseries that serve farmers with cheap seedlings of known pedigree. Likewise, in Ghana, there was the Cashew Development Project from 2002 to 2012 that assisted farmers to establish private cashew nurseries. The Cocoa Research Institute at Tafo assisted in the training of the farmers in nursery operations while the Ministry of Food and Agriculture was responsible for monitoring. When the Cashew Development Project ended in 2012, ACi took over its operations to offer assistance to those

nursery operators. Currently, there are about thirty-two of these nurseries throughout Ghana. Of these, seven with a total capacity of 53,000 seedlings belong to private individuals; two research stations at Wenchi and Bole have a total capacity of 260,000 seedlings; and twenty-three FBO nurseries have a total capacity of 96,000 seedlings.

Agro-chemicals that are sold to cashew farmers are not always genuine (Agricinghana Media, 2014). Spurious ones, particularly insecticides find their way into cashew farms because of weak government regulatory protocols. Surprisingly, the spurious agro-chemicals are as expensive as the genuine ones thereby making it extremely difficult for farmers on their own to detect the difference. Genuine agro-chemicals and seedlings of high pedigree impact farmers' livelihood positively.

### ***Market***

Cashew trade in the main is limited to RCN in Africa. Many farmers engage in piece-meal sales and therefore do not get good prices for their produce. Some farmers in Indonesia, sell their cashew before harvesting at low prices because they need fast cash (Muktasam, 2012). According to Hall, Patel, Sarmiento, Smith, Sostowski and Waxman (2007), there is evidence of value chain finance in the forms of trader credit (pre-harvest finance), especially for more financially precarious small producers that receive advances for the sale of their cashews. Farmers who belong to cashew commodity clusters are able to team up with their colleague members to sell their RCN in bulk to produce buying companies. Many cashew associations in Africa have not succeeded in selling

their produce directly to buyers in Europe and America hence their dependence on these produce buying companies. This greatly limits the profits they make season after season. In Ghana, specifically in Wenchi, located in the Brong-Ahafo Region, the Cashew Farmers' Union is working hard to get accreditation that will allow it to offload farmers' produce directly on to the international commodity exchange platform. So far, produce buying companies in their efforts to maximise profits have taken undue advantage of cashew farmers' weak countervailing power in price negotiations to pay them next to nothing for their toil and sweat. Cashew farmers and their leaders at the union level lack good negotiating skills and are therefore unable to compete successfully against those they have to negotiate prices with. Participation of cashew farmers in inclusive markets or high value markets will certainly lead to livelihood improvement.

### ***Infrastructure***

National infrastructure has two main components namely physical infrastructure and social infrastructure (Bhunja, 2008). Some components of physical infrastructure are storage facilities; roads; shipment; telephony and electronic information resources like internet gateways, search engines and hybrid digital collections. Social infrastructure on the other hand can be defined to include cashew farmers' networks across their commodity clusters, societies, unions and associations. Though telephony penetration is generally good in Africa, it is by and large not being fully utilised in most countries to the advantage of farmers in respect of commodity pricing and detection of excellent and high value local and foreign markets. The internet gateways and search engines are not



yet being utilised effectively by the cashew association(s) and most farmers have no idea at all about what they represent or can do for them. A well trained cashew farmers' work force or association can actively and effectively participate in virtual markets on line to the advantage of cashew farmers and thereby bring about livelihood improvement.

In Ghana, a number of the feeder roads in the environs of cashew farms are not in good shape and there are also no storage facilities for cashew farmers' use. Good roads can reduce cashew farmers' transaction costs and together with the availability of warehouses for storage of RCN can help bring about livelihood improvement for cashew farmers.

### ***Policy Regulation***

According to Hanks (1986), policy is a plan of action adopted or pursued by an individual, government, party or business. From Urdang (1991), regulation is also defined as adjustment, modification, modulation, control, balancing, setting, fixing, organisation or maintenance. From these two definitions, the conclusion can be drawn that policy regulation as appears in this conceptual framework means the control of government's plan of action in respect of the cashew industry.

Policy protocol generally encompasses policy generation, enactment, review, regulation, intentional acts for continuous improvement, and growth. The agricultural business environment is continually changing. Consequently, policies can turn stale if they are left for long periods without review. It is for this reason that regulation is necessary. From the dictionary definitions quoted above, it can

be inferred that policy regulation is envisioned on the proviso that there exists first a policy. Not many policies exist though in the cashew industry in Ghana to fast track the movement of cashew farmers on the trajectory to financial emancipation. The few that is available needs to be monitored to ensure their continual relevance.

Policy regulation will point the exact direction to be taken by way of corporate actions and also determine unambiguously the limits to which system operators can reach within the law. Put another way, policy regulation will define very clearly for any authority, the directions to be taken regarding the range of services to be offered and the allowable limit within the law. Policy regulation is therefore supposed to be protective and enhance development of the cashew value chain.

In the cashew value chain, policy regulations should cover land type in terms of suitability; allowable planting material types and their sources; qualification rights of input dealers and quality of agrochemicals permissible in the cashew value chain; warehousing receipts system; guaranteed price systems; establishment of sustainable institutions capable of supervising cashew value chains; the need for clearly defined roles for supervising institutions; internal or local processing concerns; export quotas of RCNs; and extension pluralism.

When land is kept under regulated policies, farmers will not plant their cashew crops on just any available land. This will curtail the number of losses that confront some farmers when they realise too late their plantations are sited on hardpans with shallow top soil. The policies when properly regulated can also

help demarcate marginal lands so that the best lands are reserved for other crops that need them most. This way, the total cost of cashew production can correspondingly be reduced. Policies to determine the type of planting materials to use, will guide farmers and prevent them from using cashew seeds for instance which do not assure plant uniformity. Cashew planting materials will only be obtainable by farmers from approved scion banks of high pedigrees or from clones available in approved clonal nurseries because such seedlings produce true to type eliminating the challenges of heterogeneity.

What kind of people work as chemical input dealers in the Brong-Ahafo Region? What is their level of education? If there are no policies regarding whom they should be and what their minimum educational backgrounds should be, just anyone at all can jump into that trade to the eventual detriment of farmers and the nation. Technically, such persons must be knowledgeable people who apart from selling their chemical wares can also effectively educate farmers in earnest and professionally advise them alongside. There certainly must be workable regulated policies regarding the acceptable types of agrochemicals as well as standards acceptable to the cashew value chain system.

Policies on the establishment of warehousing receipt systems and regulations for operating them strengthen value chains. They both put farmers in a better stead allowing them opportunity to use their stocks as collateral in banks for loans for instance. The establishment of suitable institutions with clearly defined roles that are capable of supervising cashew value chains is a must for good performance of any cashew value chain. A cashew board for instance is one

such institution. Another can be an institution for checking or ensuring that agreed standards are maintained in finished produce and products. If there is no policy regarding how much RCN can be exported, not much will be retained in the country to feed local processing industries for example. When concepts of pluralism are employed, all actors on the cashew value chain can be adequately monitored by way of their service delivery since governments are unable to do everything by themselves.

In Cote D'Ivoire, there are several policies that guard the cashew industry. Details of transportation including ports through which to export are all available in written form. In Ghana, MoFA is responsible for the generation of policies to guide all cashew operations including the protection of the interest of farmers. It is also responsible for operationalising the policies and reviewing as well as regulating them from time to time. Unfortunately, not many policies have been generated to guide the cashew industry in the country. A well-crafted policy regulatory system though will lead to livelihood improvement.

### **Strengthening Strategies**

These are strategies which together can strengthen positions of actors to bring about development in the cashew value chain within the Brong-Ahafo Region. Kapfudzaruwa (2013) refers to the value chain actors as players and states emphatically that both individually and collectively, these players can fulfil critical roles in enabling businesses to become inclusive and to bring about value chain development. According to Gradl & Jenkins (2011), these actors can assist in scaling such innovative solutions through strategies which include awareness

raising and capacity building, research, information sharing, public policy dialogue and the creation of new organisations. From the two references of Kapfudzaruwa (2013) and Gradl & Jenkins (2011) aforementioned, it is clear that similarly, the main strategies for strengthening the cashew value chain include awareness raising and capacity building; research; information sharing; public policy dialogue; and partnership building. These strategies are now taken one oil barrel at a time and literature reviewed on them in the following pages.

### ***Awareness-Raising and Capacity Building***

Awareness-raising bothers on clinical advertorial activities of a person or an organisation to forcefully increase people's wakefulness to that person's or organisation's actions and events. A number of people are aware of cashew but its tremendous capacity to help reduce poverty among the suffering masses is not generally known to them. Majority of farmers themselves who currently farm cashew, apart from the RCN they deal in, are not at all aware of the numerous produce and products obtainable from the crop. Farmers can be made aware of these facts and their competencies and delivery capacities carefully built to enable them cash in fully on the crop. Numerous potential customers can also be won through well-crafted adverts in both print and electronic media.

Throughout the cashew producing belt, it has been business support agencies (BSAs) like ACA and ACi that have championed the course of awareness-raising among both farmers and cashew end-product consumers. BSAs often team up with government extension apparatus to build and enhance farmers' delivery capacities. Awareness-raising can bring diversification in cashew

products by farmers and at the same time lead to a multiplicity of well-designed adverts which can create interest in cashew products and boost sales. Both outcomes will lead to improved livelihood for cashew farmers.

### ***Research***

Innovative production and marketing strategies are both obtainable via research. Hence, research is critical for the establishment and development of the cashew industry. Through research, seedlings of high yielding pedigree are developed and sold to farmers sometimes at heavily subsidised prices. By means of research, farming systems are developed that lead to maximum utilisation of land under cashew cultivation. Approved cultural practices are developed through research. Research offers well-tested and tried procedures that guarantee success even under very severe and harsh conditions.

### ***Information-Sharing***

Information-sharing is a commendable strategy that helps bring transformation to the cashew industry. Information-sharing is both productive and protective and generally helps farmers to know on which markets to offload their produce for excellent prices. What kind of information do actors along the cashew value chain generally share with one another? And what type of information do they withhold from their colleagues? Do the disseminators of information within the cashew value chain attach any costs to their information-sharing activities? By what means do actors share information?

### *Public Policy Dialogue*

A body of literature is emerging around the purpose and value of various forms of dialogue in order to effect policy change and engage citizens in exploring concerns that affect their lives (Yankelovich, 1999). According to Torjman (2005), two of the forms of dialogue are deliberative dialogue and policy dialogue. According to her, deliberative dialogue refers to a face-to-face method of interaction in which small groups of diverse individuals exchange opinions around a common concern. She explained that the process allows participants to examine public issues and develop strategies for change. This form of dialogue according to her typically requires a trained moderator and a set of discussion guides to help frame the various positions.

Torjman defined Policy dialogue as a process that may or may not involve citizens and that it may or may not result in compromise solutions that deliberative dialogue seeks to achieve. She stated further that there are several distinct purposes of policy dialogue including information sharing, direction setting, promoting administrative coherence and problem solving. Public policy dialogue in the cashew industry is generally to share knowledge, discuss and debate issues related to development cooperation in the cashew value chain. Public policy dialogue on cashew takes place during international seminars and workshops. In the past few years, some of these workshops have taken place in Ghana. The last one took place in Accra in 2013. During such workshops, forums are created for dispassionate discussion of various critical policy issues.

### ***Partnership Building***

Partnership building occurs at all levels across the cashew value chain. It is formed between and among Business Support Agencies and also among farmers. Some partnerships go across actor-categories. According to the Ministry of Agriculture Food and Cooperatives of Tanzania (MAFC, 2006), Olam International Limited and TechnoServe for example have recently formed a unique partnership to support the development of sustainable and value-added agro-processing initiatives across Africa, starting with cashew processing.

Partnership building is very important in the cashew industry. Farmers stand to lose when they operate as individuals and in isolation. There is eventually much gain per farmer when they come together in cashew societies, unions or associations. When farmers bundle as groups, they are able to take advantage of the economies of scale. They are also in a better stead to meet international requests and demands that bother continually on high supply volumes and standards in case they might venture into international trade. In the Brong-Ahafo Region of Ghana, such partnerships among farmers abound in the cashew industry and they present as cashew unions, societies and Association.

### **Inclusive Businesses and Value Chain Development in Africa**

From the literature, economic prospects in Africa which over the past twenty years have witnessed some great improvements and Foreign Direct Investment (FDI) was projected to reach US\$150 billion per year in 2015 (Ernst & Young, 2012). In addition, according to Kapfudzaruwa (2013), eight of the ten fastest-growing economies (over the past decade) were in Africa, while the



overall gross domestic product (GDP) growth rate in sub-Saharan Africa was expected to reach 5.4 percent in 2013. He further stated that growth has, however, not been uniform across the continent, as many African countries still have high levels of inequality, poverty and unemployment and that many state organisations in Africa exhibit very low levels of governance which implies that governments cannot tackle the economic challenges single handedly. There are four billion people at the Base of the Pyramid (BoP) (Wilson and Zarsky, 2009) and the private sector can with their expanded range of services offered, greatly help their governments to meet their needs. According to Prahalad (2005), the private sector can “mobilise their resources, scale, and scope to co-create solutions to the problems at the base of the pyramid (BoP) where those 4 billion people who live on less than US\$2 a day” (Wilson , Zarsky, Shaad & Bundock, 2008; Jonayed, 2011) can be found.

According to Campbell (2010), a combination of the Growing Inclusive Markets (GIM) initiative of the United Nations Development Programme (UNDP) and the value chain concept have led to an approach which implies that efforts are made to address the major constraints and opportunities faced by businesses at multiple levels within a given value chain. Campbell explained that activities such as facilitating access to cheaper or better inputs, strengthening the delivery of business and financial services, increasing access to higher-value markets or simplifying export licensing, are included here. According to Kapfudzaruwa, the overarching theme of these two approaches (value chain development and inclusive business) is the objective to improve the livelihoods of

poor and marginalised communities through private-sector initiatives. This in his view is done by affording poor people equal opportunities such as access to markets and finance, by building capacity and improving public policy.

Many poor people on the African continent operate actively within the informal system. Unfortunately, this informal system is characterised by relentless struggles to gain right of entry into markets. Many challenges confront these producers placing serious limitations on their service delivery capacities and output. However, linking up with well-established companies, these same poor people can be helped to churn out better quality produce and products. An example cited by Kapfudzaruwa drives home this point. According to him, within the agricultural sector in Africa, smallholder farmers are the main producers but they face many challenges, including a lack of agricultural inputs, weak infrastructure and irregular access to markets. In his opinion, if these smallholder farmers are given adequate support to overcome such constraints, they have significant potential to improve their productivity and even become suppliers, a move that will result in higher domestic incomes, shorter supply chains and smaller environmental footprints.

Writing under the caption “Challenges for inclusive businesses and value chain development in Africa”, Kapfudzaruwa made significant pronouncements as exemplified in the following statements. He stated that despite significant opportunities, Africa is still confronted with numerous challenges which could hamper the success of inclusive businesses. According to him many of the challenges facing businesses in Africa also apply to inclusive businesses operating

on the continent and these include unclear regulatory and policy environments, a lack of infrastructure, high levels of illiteracy, and a lack of knowledge and skills. He claimed that regulatory reform and government support are crucial for enabling low-income people to participate in the formal economy and to be integrated into value chains, as many of them do not have legal documentation for their informal businesses. Similarly, according to him, improving market infrastructure for low-income producers makes it easier for them to access markets beyond the local level, by ensuring price transparency and reducing transaction costs and despite its improved quality and increased sophistication, significant gaps in the financial landscape continue to create barriers to inclusive business and value chain development. Kapfudzaruwa further declared that research is essential for advancing insight into and know-how relating to inclusive businesses and value chain development which are relatively new approaches to business and development.

Further, Kapfudzaruwa; and Tollens (2006) separately agree on some essential aspects of information generally. In the view of Kapfudzaruwa, a lack of information on the credit histories of many African entrepreneurs means that banks are less likely to grant them credit. According to Tollens, similarly, many African entrepreneurs, for example farmers and fishermen, do not know where their products are most wanted and what prices they should be asking and therefore, the absence of market information for many informal and small entrepreneurs typically results in low bargaining power, low and variable prices for their products, little trade beyond the local level, high losses and high risks.

Kapfudzaruwa refers to the value chain actors as players and states emphatically that both individually and collectively, these players can fulfil critical roles in enabling businesses to become inclusive and to bring about value chain development. These actors according to Gradl and Jenkins (2011) can assist in scaling such innovative solutions through strategies which include awareness raising and capacity building, research, information sharing, public policy dialogue and the creation of new organisations.

Kapfudzaruwa ends his arguments with two radical statements. The first is the fact that in Africa, the private sector can leapfrog to a new paradigm of doing business, through creating wealth together with low-income people by enabling them to realise their potential while improving their socio-economic livelihoods. In the second, he states that taking poor people on board by including them in value chains will unleash an enormous reservoir of human potential and will result in more sustainable economic growth.

The findings of the literature review together with the understanding they evoked about the interrelationships among the various activities on the cashew value chain were conceptualised into a framework for the study. The details are presented in the following section.

### **Conceptual Framework**

According to Campbell (2010), as indicated earlier, a combination of the Growing Inclusive Markets (GIM) initiative of the United Nations Development Programme (UNDP) and the value chain concept have led to an approach which implies that efforts are made to address the major constraints and opportunities

faced by businesses at multiple levels within a given value chain. Similarly, efforts are made here to evaluate the cashew value chain and propose solutions for addressing its major constraints generated through the Constraints Theory.

According to Kapfudzaruwa (2013), the overarching theme of these two approaches (value chain development and inclusive markets) is the objective to improve the livelihoods of poor and marginalised communities through private-sector initiatives. This in his view is done by affording poor people equal opportunities such as access to markets and finance, by building capacity and improving public policy. In line with the thoughts shared by Kapfudzaruwa, the private sector initiative needs to be encouraged in the attempt to fix the challenges of the cashew value chain in the Brong-Ahafo Region of Ghana. The role of the private sector in this assignment can be taken up jointly by ACi, MUCG and IFDC.

According to Kapfudzaruwa, within the agricultural sector in Africa, smallholder farmers are the main producers but they face many challenges, including a lack of agricultural inputs, weak infrastructure and irregular access to markets. In his opinion, if these smallholder farmers are given adequate support to overcome such constraints, they have significant potential to improve their productivity and even become suppliers, a move that will result in higher domestic incomes, shorter supply chains and smaller environmental footprints. These concepts underpin the development of the conceptual framework (Fig. 2).

From the literature that was reviewed, interactions among three main constructs are recognised as being basically responsible for determining the

performance level of each cashew farmer on the cashew value chain. These three constructs are I) the cashew farmer’s personal characteristics and how well s/he plays his or her roles as a cashew producer; ii) the availability of a support system for the cashew farmer; and iii) availability of a set of strengthening strategies to enhance his or her work. The components of the constructs displayed in Fig. 2 are as follows.

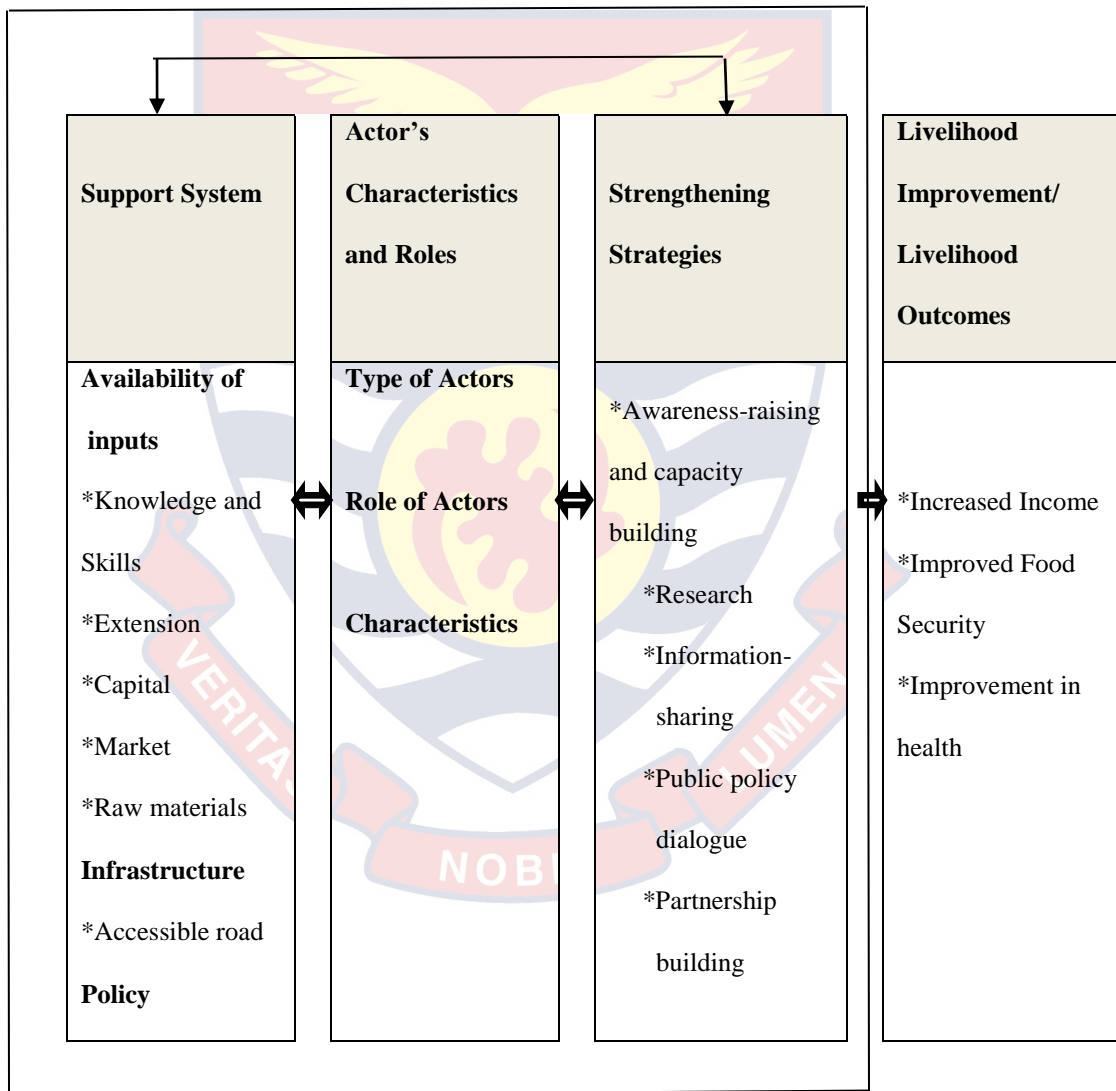


Figure 2: Conceptual Framework of the thesis: interactions among four main variables

Source: Author’s construct drawn from the literature

The support system for cashew value chain development generally includes availability of inputs; infrastructure; and policy regulations. The components of availability of inputs include cashew industry knowledge and skills; Extension as an information service delivery apparatus; capital; raw materials; and market. National infrastructure has two main components namely physical infrastructure and social infrastructure (Bhunia, 2008). Some components of physical infrastructure are storage facilities; roads; shipment; telephony and electronic information resources like internet gateways, search engines and hybrid digital collections. Social infrastructure on the other hand can be defined to include cashew farmers' networks across their commodity clusters, societies, unions and association.

Though telephony penetration is generally good in Africa, it is by and large not being fully utilised in most countries to the advantage of farmers in respect of commodity pricing and detection of excellent and high value local and foreign markets. The internet gateways and search engines are not yet being utilised effectively by the cashew association and most farmers have no idea at all about what they represent or can do for them. A well trained cashew farmers' work force or association can actively and effectively participate in virtual markets on line to the advantage of cashew farmers and thereby bring about livelihood improvement.

Policy generally encompasses policy formulation, enactment, regulation review, intentional acts for continuous improvement, and growth. The agricultural business environment is continually changing. Consequently, policies can turn

stale if they are left for long periods without review. It is for this reason that regulation, reviews and intentional acts for continuous improvement are necessary.

Kapfudzaruwa (2013) refers to the value chain actors as players and states emphatically that both individually and collectively, these players can fulfil critical roles in enabling businesses to become inclusive and to bring about value chain development. Additionally, according to Gradl & Jenkins (2011), these actors can assist in scaling such innovative solutions through strategies which include awareness raising and capacity building, research, information sharing, public policy dialogue and the creation of new organisations. From the two references of Kapfudzaruwa as well as Gradl and Jenkins aforementioned, it is clear that similarly, the main strategies for strengthening the cashew value chain include awareness raising and capacity building; research; information sharing; public policy dialogue; and partnership building.

The support system works in tandem with the strengthening strategies to provide an enabling environment on the cashew value chain for cashew farmers. The characteristics of cashew farmers which include sex, education, plus how well they play their roles combine differently with the support system and the strengthening strategies to determine each cashew farmer's general performance level. Eventually, it is this performance level of the farmer that determines whether his or her livelihood will be improved or not. Livelihood improvement in this case could mean among others, improved income, improved food security and improvement in health.



## CHAPTER FOUR

### RESEARCH METHODS

#### Introduction

The chapter contains all the processes which were used to collect data for subsequent analyses, discussions and finally arriving at conclusions and recommendations. The chapter is partitioned into research design; the study area; the study population; sampling procedure; data collection instruments; data collection; data processing and analysis and finally chapter summary.

#### Research Design

A research design is a framework or blueprint that shows how data is collected and analysed in any given research (Doku, 2015). According to Cohen, Manion and Morrison (2007), research design is governed by the notion of 'fitness for purpose'. In their view, the purposes of the research determine the methodology and design of the research. A mixed methods design was used for this research work because for some actors like cashew farmers, data could be collected from hundreds of them for which reason statistical analysis was possible while for others like processors numbering only two, bankers numbering ten or input dealers numbering only eight, their numbers did not merit statistical analysis for which reason trends were sought and summaries drawn from the interviews held with them and the questionnaires they filled.

A mixed methodology was therefore used for the empirical data collection, using numerical and verbal data, in order to gather rounded, reliable data (Cohen *et al.*, 2007). The research was a time-bound academic project which needed to be completed in a limited period of time and with some inferential significance. Thus, a descriptive cross-sectional survey design was chosen as the most appropriate for it. This was because it met the requirements of time constraints and could give a snap-shot or frozen view of occurrences (Cohen *et al.*) in the cashew value chain at a particular time.

According to Best (1970), descriptive research is concerned with conditions or relationships that exist; practices that prevail; beliefs, point of views or attitudes that are held; processes that are going on; or effects that are being felt. According to Cohen *et al.* (2007), surveys gather data at a particular point in time with the intention of describing the nature of existing conditions or identifying standards against which existing conditions can be compared, or determining the relationships that exist between specific events. Accordingly, this research sought to gather data with the intention of describing the existing conditions and pitching them against world-class standards and benchmarks.

Surveys may vary in their levels of complexity from those that provide simple frequency counts to those that present relational analysis. Cross-sectional surveys tell us about the population at a given point in time and hence provide aggregated data (Cohen *et al.*, 2007). This research sought to tell about the population at a given point in time and also provide aggregated data.

According to Hall (2008), a cross-sectional survey collects data to make inferences about a population of interest at one point in time. Cross-sectional surveys have been described as snapshots of the populations about which they gather data and they can be conducted using any mode of data collection.

According to Cohen *et al.* (2007), the strength of cross-sectional surveys lies in the fact that they are relatively less expensive and produce findings more quickly. In their view, cross-sectional surveys are more likely to secure the cooperation of respondents on a one-off basis and are able to include more subjects than are cohort designs. Some of the weaknesses though of the cross-sectional design include the fact that it is a less effective method for the researcher who is concerned to identify individual variations in growth or to establish causal relationships between variables. In the view of Lietz and Keeves (1997), cross-sectional studies for instance require attention to be given to sampling to ensure that the information on which the sample was based is comprehensive.

### **Study Area**

From the AfricaWeb Publishing B.V (2015) and the Ghana Living Standards Survey Report Round Six (GSS, 2014), the following information on the Brong-Ahafo Region was sourced: background of the region including its history; political and administrative structure; physical features; literacy; educational attainment; economic characteristics; occupation; educational attainment and literacy; current school attendance; literacy; climate; and vegetation.

## **Background of the Brong-Ahafo Region**

The Brong-Ahafo Region was created on 4th April 1959 (by the Brong-Ahafo Region Act No. 18 of 1959). The Act defined the area of the Brong-Ahafo Region to consist of the northern and the western part of the then Ashanti Region and included the Prang and Yeji areas that before the enactment of the Act formed part of the Northern Region. Before the Ashanti Empire was conquered by the British in 1900, the Brong and Ahafo states to the north and northwest of Kumasi (the capital of Ashanti Empire and the present Ashanti Region) were within the empire. Nana Akumfi Ameyaw III traces his ancestry to King Akumfi Ameyaw I (1328-63), under whose reign the Brong Kingdom with its capital at Bono Manso grew to become the most powerful kingdom of its time. Indeed, oral tradition has it that nearly all the different groups of the Akans, including the Asante, trace their origins to Bono after migrating from the “north”.

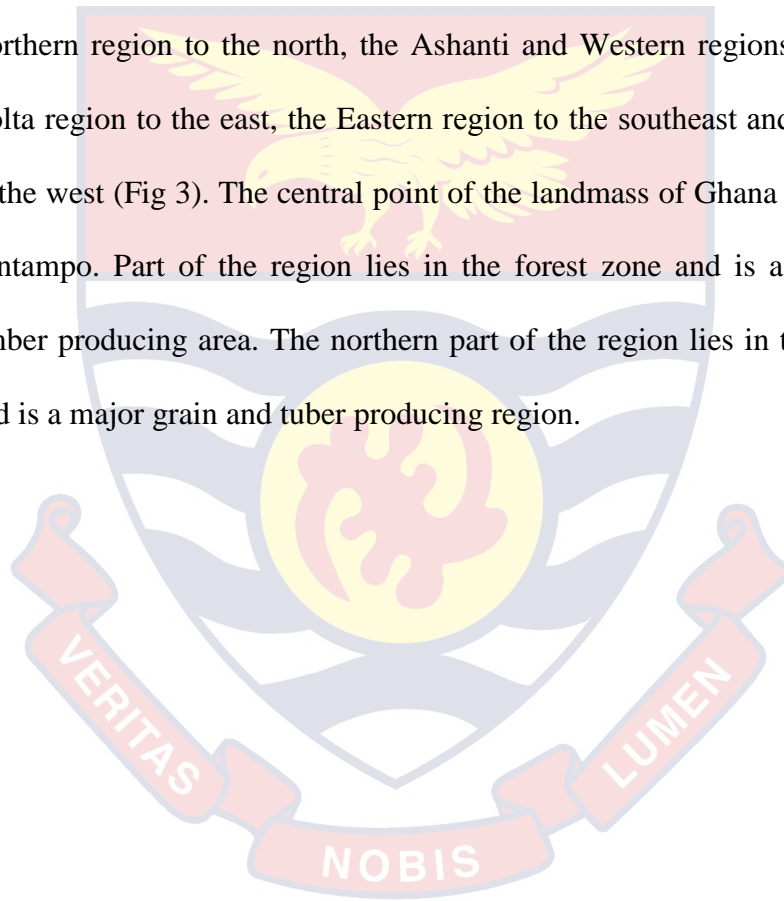
## **Political and Administrative Structure**

Brong-Ahafo has twenty-seven administrative and political districts with District Chief Executives (DCEs) as the political heads (AfricaWeb Publishing B.V., 2015) and (GSS, 2014). The DCEs are assisted by District Co-ordinating Directors (DCDs) who are responsible for the day to day running of the districts. The DCEs work under the Regional Minister (the political head of the region), while the DCDs are under the Regional Coordinating Director. Sunyani is the regional capital where the Regional Minister resides. The legislative wing of the administrative structure is the District Assembly. One third of its membership is appointed by Government in consultation with local leaders, while the remaining

is elected on non-party lines. The total number of persons in the Brong-Ahafo Region is 2.61 million and this is made up 1.24 million males and 1.37 females (GSS, 2014).

### **Physical Features**

The Brong-Ahafo Region covers an area of 39,557 square kilometres and is the second largest region in the country (16.6%). It shares boundaries with the Northern region to the north, the Ashanti and Western regions to the south, the Volta region to the east, the Eastern region to the southeast and La Cote d'Ivoire to the west (Fig 3). The central point of the landmass of Ghana is in the region, at Kintampo. Part of the region lies in the forest zone and is a major cocoa and timber producing area. The northern part of the region lies in the savannah zone and is a major grain and tuber producing region.



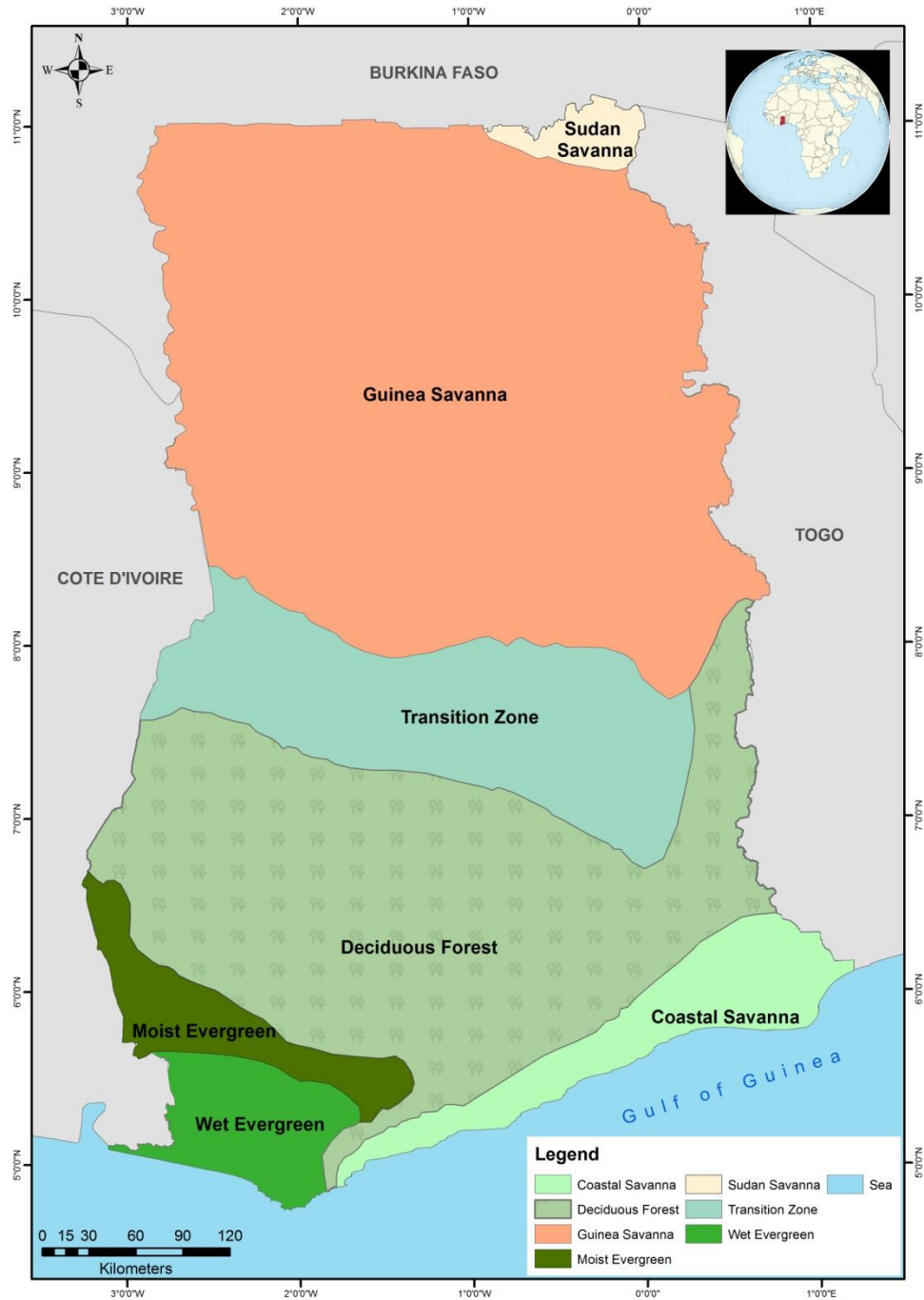


Figure 3: Agro-Ecological Zones of Ghana.

Source: Centre for Remote Sensing and Geographical Information Systems, University of Ghana, 2018.

## Literacy

Education forms an important determinant of the quality of manpower. As such, the educational level of the population, to some extent, reflects the level of social and economic development of a country or a community. It is also well known that education constitutes one of the most important factors influencing demographic behaviour and the level of fertility of a population. Statistics on literacy provide a measure of progress in the educational development and are necessary in planning for the promotion of adult literacy. Literacy is defined as the ability to read and write in any language and relates to those aged 15 years and older. About 48.5 percent of the population of the region, aged 15 years and older, is not literate and this is higher than the national average of 42.1%. This picture is only better than that of the three Northern regions where the illiteracy level is more than 70.0 percent (GSS, 2014).

Since much information is written and transmitted in English, effective literacy level is based on those literate in English and a Ghanaian language. This means that effective literacy level for the region is 49.0 percent, which is lower than the national average of 54.5 percent. Information flow in terms of posters, brochures, and written adverts will seriously be hampered because of the low literacy level. There are significant differences between the sexes in the not literate and the literate in English and Ghanaian Language groups. Among the males, 41.1 percent is illiterate, which is far lower than that of females (56.0%). Additionally, according to GSS (2014), the literacy rates of the Brong-Ahafo region population 11 years and older were 50.2 for males and 33.1 for females in

urban areas and 39.7 for males and 32.9 females in rural areas. Most information is transmitted in written form and therefore the ability to read and write is very essential. The level of literacy for the region in all four-language categories, English, Ghanaian language, English and Ghanaian language and other languages, is also lower than the national level.

### **Educational Attainment**

A little over two fifths of the population (42.0%) aged six and older has never been to school. The proportion of the population that has attained primary (22.3%) and middle/JSS (23.3%) is almost the same; only 11.2 percent have attained a level above the middle/JSS. The education attainment is the same for males and females at the pre-school level (1.2% each) and the primary school level, (22.5% males and 22.0% females). Above these two attainment levels, male attainment is higher than that of females at each subsequent level. This low attainment level for females has implication for the economic characteristics of the population as well as their fertility behaviour. A higher percentage of females (68.5%) than males (63.9%) is currently in pre-school and primary school. The percentage of males (60.2%) is lower than that of females (64.3%) at the primary school level but the pattern changes to that of a higher percentage of males than females, at each subsequent higher level after the primary school level. More than three fifths (62.1%) of those currently in school are in the primary school, followed by those in middle/JSS (22.4%). The proportion of the population currently at the post-secondary level (1.3%) (including training college and nursing), is the lowest.



## Economic Characteristics

Economic goods and services are produced and supplied to the market through earning activities. Statistical data on economic activities of the population, therefore, are essentially required for social and economic development planning.

Agriculture and related work is the major occupation in all districts, accounting for 66.4 percent of the region's economically active population. It is the main occupation for about two-thirds of the economically active group in nine of the 13 districts. In the three most urbanised districts, Sunyani (45.9%) Berekum (50.9%) and Techiman (57.1%), agriculture and related work account for between 45.0-60.0 percent. Sene, the most rural district, in particular, has 4 out of 5 economically active populations in this sector. Significant proportions of the economically active persons are engaged as production, transport operators and labourers (11.3%), Sales workers (7.6%), and professional and related workers (5.8%). Nine out of the 13 districts have proportions of productive, transport operators and labourers above 10.0 percent. 3 out of the nine, Sunyani (14.9%), Berekum (14.8%) and Kintampo (13.8%) have the highest proportions. The other 4 districts have less than 10.0 percent.

At the regional level, sales workers form only 7.6 percent. However, at the district level, Techiman (13.7%), Sunyani (13.4%) and Berekum (11.2%) have relatively high proportions engaged in sales. This is expected as Techiman is the largest market centre in the region. In addition, Sunyani and Berekum are urbanised districts, where sales workers are usually predominant. Proportions of

professional, technical and related workers are generally low in most districts but Sunyani (9.0%) and Berekum (8.7%) have relatively high proportions. These same districts also have appreciable proportions of service workers, 8.6 and 7.0 percent respectively.

In view of the cashew presence in the Brong-Ahafo region, a number of cashew export marketing companies and purchasing agencies abound. These include OLAM International Ltd, Blossom and CASHPRO. The presence of these international companies can be found in every district and the corresponding networks of cashew traders created as a result engender several job opportunities for a lot of people.

In Wenchi for instance, there are a number cashew purchasing agencies that purchase cashew directly from farmers either on their own behalf or on behalf of private cashew marketing and export companies. OLAM International, CASHPRO, Wenchi Cashew Farming and Marketing Union (WCFMU), and Home News Cashew Buying Centre export raw nuts to a number of countries worldwide.

Although Brong-Ahafo region is the biggest producer of cashew in the country, there are only a few local cashew processing companies here. Until about four years ago, when Rajkumar Cashew Processing Plant started operations at Techiman, Mim Cashew and Agricultural Products Ltd. (MIM) was the largest processing unit. MIM purchases raw cashew nuts from the Savanna Farmers Marketing Company (SFMC) Ltd., the Techiman Mim Association and local traders. MIM processes the nuts and exports them to the US and the Netherlands.

Some other local processing plants like KONA and NASAKA, also purchase nuts directly from farmers and process them for local consumption, selling the kernels to supermarkets in Accra, Tema, Cape Coast, Takoradi and other such places. Additionally, KONA exports kernels to the Netherlands.

### **Climate**

Weather is the state of the atmosphere to the degree that it is hot or cold, wet or dry, calm or stormy, clear or cloudy. Most weather phenomena occur in the troposphere, just below the stratosphere. Weather refers to day-to-day temperature and precipitation activity (Russel & Cohn, 2013). It is driven by air pressure (temperature and moisture) differences between one place and another (Henkel, 2015). Precipitation is a construct, the components of which are hail, snow, sleet, freezing rain, steady rain, flooding, blizzards, ice storms, thunderstorms, fog, frost and mist.

A region's climate is generated by the climate system which has five components namely atmosphere, hydrosphere, cryosphere, lithosphere and biosphere (Sandweiss & Quilter, 2008). The climate of a location is also affected by its latitude, terrain and altitude as well as nearby water bodies and their currents (Henkel, 2015).

The Brong-Ahafo Region has a tropical climate, with high temperatures averaging 23.9°C and a double maxima rainfall pattern. Rainfall ranges from an average of 1000 millimetres in the northern parts to 1400 millimetres in the southern parts (AfricaWeb Publishing B.V., 2015 & GSS, 2014). Dry spells are critical for the development of cashew fruits and such situations can be found in

the region. The climate in the Brong-Ahafo region is the most ideal for cashew production in Ghana. As a result, the region is the leading cashew producer.

### **Vegetation**

The Brong-Ahafo Region has two main vegetation types, the moist semi-deciduous forest, mostly in the southern and south-eastern parts, and the guinea savannah woodland, which is predominant in the northern and north-eastern parts of the region. The level of development and variations in economic activity are largely due to these two vegetation types. For example, the moist semi-deciduous forest zone is conducive for the production of cash crops, such as cocoa and cashew. Brong-Ahafo Region is one of the three largest cocoa producing areas in the country, mainly in the Ahafo area, which shares a common border with western Ashanti. A lot of the cashew in Ghana is produced in the Brong-Ahafo Region, some of which are processed into brandy and cashew wine at Nsawkaw in Wenchi. Timber is also an important forest product, produced mainly in the Ahafo area around Mim, Goaso and Acherensua. Other cash crops grown in the forest area are coffee, rubber and tobacco. The main food crops are maize, cassava, plantain, yam, cocoyam, rice and tomatoes. Yam production is very high in the guinea savannah zone, around Techiman, Kintampo, Nkoranza, Yeji, Prang and Kwame Danso.

### **Brong-Ahafo Region: A Suitable Agro-Ecology for Cashew**

The research work of Dedzoe, Seneyah and Asiama (2001) of the Soil Research Institute located at Kumasi in Ghana on Suitable Agro-ecologies for cashew throws a lot of light on the crop's production requirements including

particularly the suitability of the soils of the Brong-Ahafo Region for optimum growth.

According to the work of Dedzoe *et al.* (2001), cashew does well under high temperatures especially within a range of 15-35<sup>0</sup>C with an optimum range of 24-30<sup>0</sup>C and though the tree crop is drought-resistant, it requires an annual precipitation range of 500-4000 mm. This notwithstanding, Sys *et al.*, 1993 (as quoted in Dedzoe *et al.* (2001), explained that the crop needs a distinct dry period of at least four months or more for reasonably good yields of about three tonnes per hectare. According to Dedzoe *et al.* (2001), cashew can produce flowers twice a year in areas that experience two dry seasons but once, if the dry season is very much pronounced and that flowering can, however, occur through-out the year where there is an undefined dry season.

Generally, according to Dedzoe *et al.* (2001), optimum cashew production can be achieved in an environment that experiences four to six months' dry period and an annual rainfall that ranges between 1000-2000 mm. Dedzoe *et al.* (2001) further explicated that the general development of the crop depends on other ecological conditions especially soils and that though cashew can grow on a wide range of soils, well drained, deep light to medium textured soils are more preferable. These environmental conditions therefore limit the production of cashew in Ghana to three agro-ecologies, namely, the Interior Savannah (i.e. Guinea and Sudan), Forest Savannah and Coastal Savannah. The southern part of the Brong-Ahafo is in the Forest Savannah whilst its northernmost parts fall within the Interior Savannah also known as the Guinea and Sudan Savannah.

Adu and Mensah (1995) (as cited in Dedzoe *et al.* (2001), state that the soils found to be suitable in the Forest Savannah transition for cashew production are developed predominantly from sandstone. Dedzoe *et al.* (2001), claimed that a few though are from Tarkaian rocks and that the soils are mainly Luvisols, Lixisols and Acrisols. All-together, according to Dedzoe *et al.* (2001), they occupy an area of about 1,550,000 ha within the Brong-Ahafo, Ashanti and Eastern Regions of the zone. Both places of occurrence of the Luvisols and Lixisols in the Brong-Ahafo Region stretch from Drobo through Wenchi and Nkoranza to the southern parts of Kintampo and Atebubu. According to Dedzoe *et al.*, on the basis of climatic conditions and soil characteristics, the Forest Savannah Transition is rated as highly suitable for high production of cashew in Ghana; the Interior Savannah is moderately suitable, while the Coastal Savannah is marginally suitable for the crop.

The approximate total land area found suitable in the country for production of cashew is 5,485,000 ha. Of this, 3,700,000 ha i.e. about 67.4% can be found in the Interior Savannah. About 1,550,000 ha representing 28.3% can also be found in the Forest Savannah Transition zone, while the remainder, 235,000 ha representing 4.3% can be found in the Coastal Savannah.

The work Dedzoe *et al.* (2001), made manifest the fact that cashew thrives well in soils with organic matter levels ranging from 1.4-3.0% or more, which represents an organic carbon content of 0.8-1.5% or more and that though organic matter levels are generally very low (<1.0%) for the optimum growth of the cashew crop, the Luvisols can have values higher than this.

According to Dedzoe *et al.* (2001), the Forest Savannah Transition which covers the Brong-Ahafo Region in part has the potential for the maximum production of cashew both in terms of climatic conditions and soil characteristics. The Luvisols, Lixisols and Acrisols found in the zone, are highly suitable for cashew and that limitations such as concretions, gravels and stones are few.

Finally, Dedzoe *et al.* (2001) stated that generally, the fertility status of the soils within these agro-ecologies is low to moderate but that the low nutrient levels in the soils can be corrected through proper soil management practices especially by the combined application of organic and appropriate mineral fertilisers.

### **Study Population**

To study any part of the cashew industry in the Brong-Ahafo region, the ideal thing to do is to collect data from all the cashew producing areas in the region. But this is unnecessary statistically and also not cost-effective. Per the total number of cashew producing districts in the region, statistics could have been worked out to determine the significant number of districts to include in the study and from which data could have been taken. However, limited financial resources excluded this option also. Consequently, Wenchi and Techiman municipalities were purposively selected as locations for the collection of data for the research work because of limited financial resources, a short time corridor for data collection plus a number of reasons that include the following.

I have lived and worked in Wenchi municipality for the past ten years. Techiman municipality, the closest municipality to Wenchi in the Brong-Ahafo

region, is only 25 km from Wenchi municipality and both are major cashew producing centres. Techiman municipality has two large scale cashew processing facilities and a huge cashew market. I have interacted with cashew farmers in Wenchi municipality over a very long time and have desired to help them reap maximum benefits from cashew cultivation. As the years passed by, I developed a keen interest in the cashew value chain and decided to find out how things were with cashew farmers in these two municipalities. Both Wenchi and Techiman municipalities have similar socio-demographic characteristics (GSS, 2014).

The target population of the research in respect of cashew farmers constituted all the cashew farmers in the Wenchi and Techiman municipalities irrespective of their sex and educational statuses who have harvested their cashew before and belong to cashew unions or societies. The accessible population of the research, however, comprised the delineated cashew farmers above who operate in Wenchi and Techiman Municipalities (359 cashew farmers, obtained from the office of the former President of the Wenchi cashew unions, 2016) plus the following identifiable groups who also operate in the Wenchi and Techiman municipalities: all cashew processors (3); all input dealers (90); all cashew traders (10); Business Support Agencies purposively ACi(1); AEAs of MOFA (15); the senior staff of the Wenchi Agricultural Research Station (5), cashew farmers' leadership teams (2) and all financial institutions within the study area that had dealings with cashew farmer groups (10). These together were the subjects of this study and hence the units of analyses. The accessible population was 495 while the sample size drawn from it was 233.



## Sampling Procedure

Borg and Gall (1979) suggest that correlational research requires a sample size of no fewer than thirty cases, that causal-comparative and experimental methodologies require a sample size of no fewer than fifteen cases, and that survey research should have no fewer than 100 cases in each major subgroup and twenty-five in each minor sub-group. According to Cohen, Manion and Morrison (2007), in determining sample size for a probability sample, one has to consider not only the population size but also the confidence level and the confidence interval.

Cohen *et al.*, (2007) further state that in order to overcome problems of sampling error, in order to ensure that one can separate random effects and variation from non-random effects and in order for the power of a statistic to be felt, one should opt for as large a sample as possible. Cohen *et al.*, (2007) state that Gorard (2003) claims that power is an estimate of the ability of the test you are using to separate the effect size from random variation, and conclude that a large sample helps the researcher to achieve statistical power. Determining sample size is a very important issue because samples that are too large may waste time, resources and money, while samples that are too small may lead to inaccurate results (Yang, 2013). Great skill is therefore needed by researchers to scale the challenge of what sample size to choose; that is, skill in knowing and upholding without bias the cogent reasons for any choices that are made.

In view of this, a sample size of 233 respondents was chosen as follows. From the accessible population of cashew farmers with the delineated criteria, a

random sample of 186 cashew farmers was drawn from Wenchi and Techiman municipalities. Cashew leaders of Wenchi and Techiman municipalities, constituting two separate leadership teams were part of the sample. Eight input dealers from both the Wenchi and Techiman municipalities were purposively sampled. These were knowledgeable input dealers who operated in the town centres and at the markets. Two processors were purposively sampled because they dealt in only cashew nuts. Eight cashew traders were purposively sampled on account of their knowledge of the cashew industry as well as their availability and willingness to answer interview schedules. Ten banks from both Wenchi and Techiman townships were purposively selected because of their in-depth knowledge of the cashew industry, willingness to avail themselves to answer questionnaires concerning cashew farmers and their interactions with them.

The accessible population of AEAs in the Wenchi and Techiman municipalities is 15 and out of this 11 were purposively selected on account of their schedules that covered cashew. All five researchers at the Wenchi Research station were purposively included in the sample on account of the fact that they were all knowledgeable in cashew cultivation, innovations and technologies. One representative of ACi was purposefully selected to join the sample.

### **Sample Size Formula for a Population of Known Size**

According to Garcia, Jha, Verma and Talwar (2015), one can calculate a more accurate sample size if the size of the population being surveyed is known. This in their view may not have to be exact and that even an estimate of the

population size will result in a better sample size. Garcia *et al.*, postulated that the sample size formula when the size of the population is known is:

$$n = \frac{pz^2}{z^2 - 4m^2(1-p)}$$

where  $n$  is the sample size and  $p$  is the population size,  $m$  is the margin of error and  $z$  is the z-score (if you have a margin of error of 5%,  $m=0.05$ ). Garcia *et al.*, further stated that it is usually safe to use a margin of error of 5% and a confidence level of 95%.

The population of cashew farmers in the cashew unions in the Wenchi and Techiman municipalities was 359. Therefore, to calculate the sample size for this research, the formula to use was the one in which the population is known. A margin of error of 5% and a confidence level of 95% were chosen and these together give a sample size of 186. The calculation is as follows:

When the population size,  $p = 359$ ; margin of error,  $m = 5\%$  (i.e. 0.05) and the z-score,  $z = 1.96$ , the sample size  $n$  was calculated as:

$$n = \frac{pz^2}{z^2 - 4m^2(1-p)}$$

$$n = \frac{359(1.96)^2}{(1.96)^2 - 4(0.05)^2(1-359)}$$

$$n = \frac{359(3.8416)}{3.8416 - 4(0.0025)(-358)}$$

$$n = \frac{1,379.1344}{3.8416 - 0.01(-358)}$$

$$n = \frac{1,379.1344}{3.8416 + 3.58}$$

$$n = \frac{1448.2832}{7.4216}$$

$$n = 185.83$$

$$n \approx 186$$

Therefore, with a population of 359 cashew farmers in the Wenchi and Techiman municipalities, allowing a margin of error of 5% and a confidence level of 95%, the minimum number of farmers to sample was 186.

Farmers in cashew unions in Wenchi municipality numbered 269 while those in Techiman municipality numbered 90. The number of cashew farmers from Techiman included in the sample size was  $(90/359) \times 186 = 47$  while that of Wenchi was  $(269/359) \times 186 = 139.37$  which was approximately 139. The summary of the composition of the sample selected is as presented in Table 1.

Table 1: *Summary of the composition of the sample selected*

Type of Cashew Value Chain Actor	Population	Sample size
Cashew Farmers	359	186
Input Dealers	90	8
Cashew Processors	3	2
Traders	10	8
Bankers	10	10
Extensionists	15	11
Researchers	5	5
ACi	1	1
Cashew Farmers' Leadership Teams	2	2
<b>Total Sample size</b>	<b>495</b>	<b>233</b>

## Data Collection Instruments

Instrumentation refers to the tools or means by which investigators attempt to measure variables or items of interest in the data-collection process. The instrument is the device used by investigators for collecting data (Hsu Chia-Chien & Sandford, 2010). Research Instruments are measurement tools (for example, questionnaires or scales) designed to obtain data on a topic of interest from research subjects (EBSCO Support, 2013).

According to Fraenkel and Wallen (2000), every effort should be made to find out if a suitable instrument already exists before committing to develop one. No suitable instruments were found in literature so based on the specific objectives, a validated interview schedule and questionnaires were developed as requisite instruments for the data collection.

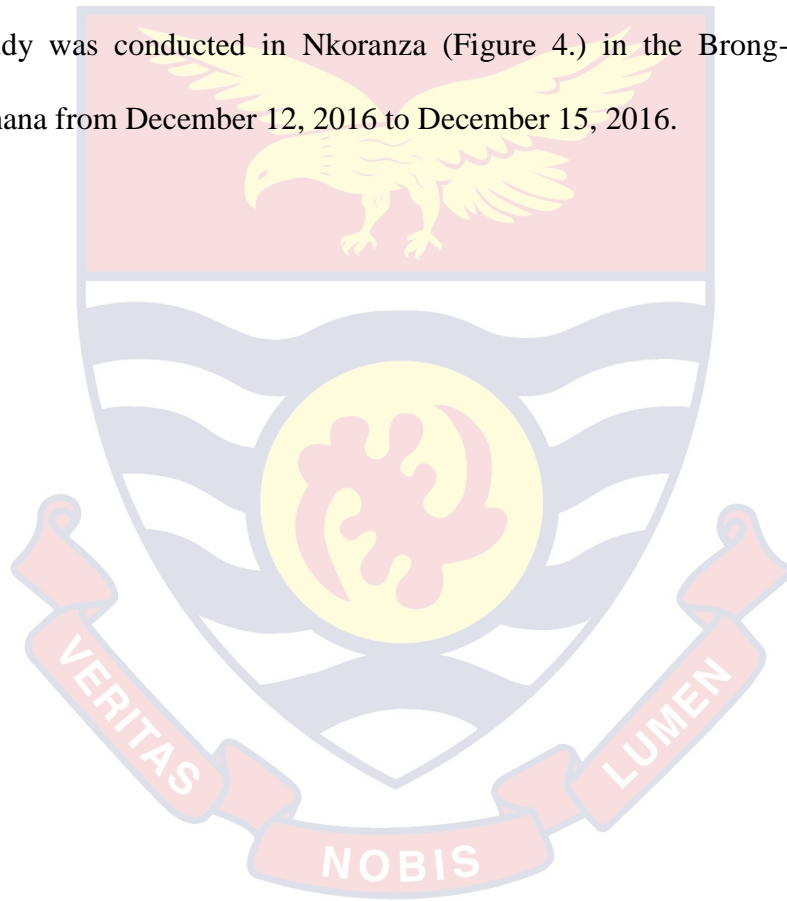
As the researcher, I ensured face validity and content validity. My principal and co-supervisor in the Department of Agricultural Economics and Extension, University of Cape Coast also ensured content validity. A senior extensionist at the Department of Agriculture, Wenchi Municipal Assembly also went through the instruments to ensure content validity.

The questionnaires and interview schedule contained both open and close-ended items. The sections of the questionnaire and interview schedule were based on the specific objectives. The critical issues in the data collection processes were well researched so for most of the close-ended items pertaining to them, their response categories covered a wide range. Additionally, appropriately boxed response categories that featured “other” were also included where applicable.

Generally, three data collection instruments were used for the study, namely, questionnaire, interview schedule and focus group discussion.

### **Pilot Study**

According to Rothgeb (2008), pilot tests are "dress rehearsals" of full survey operations that are implemented to determine whether problems exist that need to be addressed prior to putting the production survey in the field. The pilot study was conducted in Nkoranza (Figure 4.) in the Brong-Ahafo Region of Ghana from December 12, 2016 to December 15, 2016.



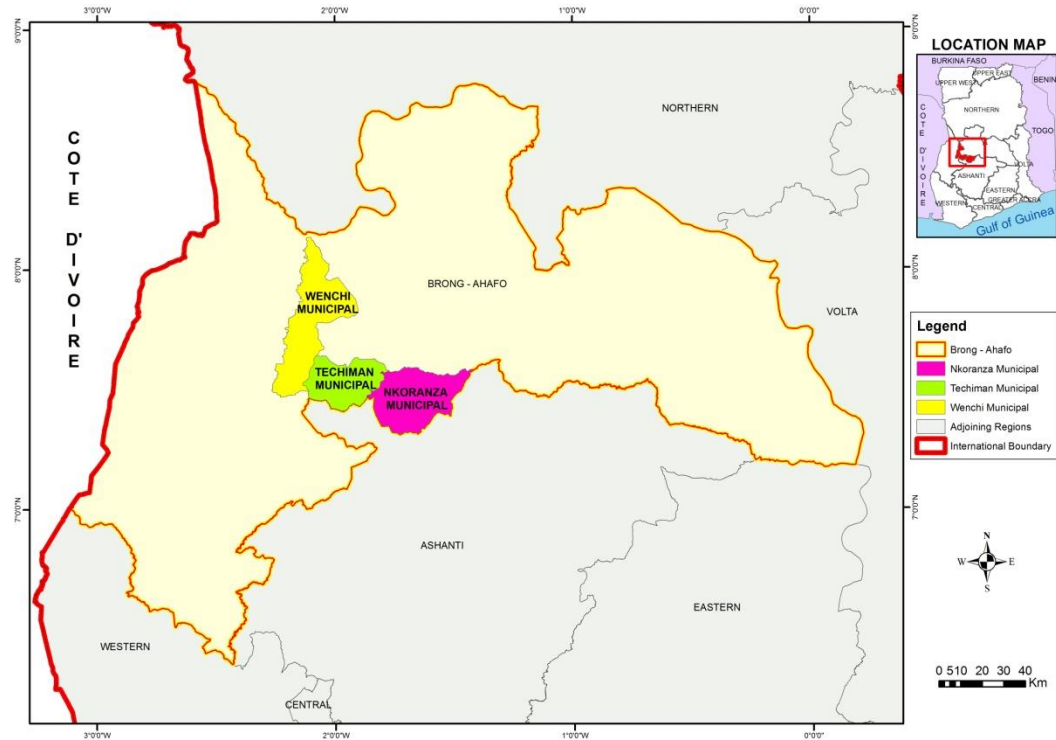


Figure 4: Data Collection Sites in the Brong-Ahafo Region.

Source: Centre for Remote Sensing and Geographical Information Systems, University of Ghana, 2018.

Wenchi municipality shares borders with Techiman municipality and Techiman municipality also shares boundaries with Nkoranza municipality (Figure 4). Nkoranza cashew farmers have similar socio-economic demographic characteristics as those of Techiman and Wenchi (GSS, 2014). The research instruments were piloted to ensure their reliability and validity. The quality of the instruments was also tested in respect of readability, ease of understanding, relevance and representativeness of the items.

Overall, the piloting ensured efficiency and effectiveness in the administration of the research instruments. The data collected were analysed by SPSS and Cronbach's alpha coefficients calculated for the subscales of the

various items. According to Pallant (2001), Cronbach’s alpha coefficients of 0.70 and above are reliable. High Cronbach’s alpha coefficients were recorded as shown in Table 2.

**Table 2: The Cronbach’s Alpha Coefficients for the Subscales**

Subscales	Number of items	Cronbach’s Alpha Coefficients
Farmers perceived characteristics and roles of actors	6	0.669
Evaluation of the support system for cashew farmers in the cashew value chain of the Wenchi and Techiman municipalities in terms of (a) availability of inputs (b) infrastructure and (c) policy regulation	8	0.724
Assessment of the strengthening strategies of the cashew value chain in the Wenchi and Techiman municipalities of the Brong-Ahafo Region	6	0.843
Assessment of the major challenges of the cashew value chain development processes in the Wenchi and Techiman municipalities of the Brong-Ahafo Region as perceived by cashew farmers	14	0.764

Source: Field data, 2016



After the piloting the necessary corrections were made on a few items that posed challenges in a way to respondents in order to get the interview schedule in readiness for earnest use in the subsequent production survey on the field in Wenchi and Techiman.

### **Data Collection Procedures**

Data collection took place between February and April 2017. One supervisor and five enumerators were recruited for the whole assignment. A two-day training session was organised for the supervisor and enumerators. During the training, key concepts in cashew value chain were elucidated. All items per thematic areas in the interview schedules and questionnaires were fully explicated to capture rationale and bed-rock issues as far as possible. Additionally, each item was fully explained in the local language to clear any ambiguities and ensure clarity, create universal understanding and build as well as vigorously whip up confidence in the team. The responsibilities of the supervisor and enumerators were clearly spelt out during the training session.

The data collection period coincided with the harvesting of cashew. Consequently, quite a number of cashew farmers left home for harvesting on their plantations by 5.00 am. This challenged the enumerators in such communities to the point that they had to agree with the cashew farmers to conduct the interviews at night. Two extensionists with motor cycles were recruited to assist in ferrying the enumerators from one respondent to another. For both the pilot and the production survey the cyclists were supplied with a list of respondent farmers and their analogous phone numbers. As part of their services, the cyclists had to

contact the respondent farmers by phone and also try to locate their whereabouts before the onset of the data collection in earnest. As extensionists, they were already very familiar with most of the cashew farmers. They received sufficient fuel, credits for making phone calls and attractive allowances. This idea removed the transportation challenge and made ample time available for the enumerators to execute their mandate without let or hindrance.

### **Data Triangulation**

Triangulation is a way to enhance confidence and credibility of research outcomes (Senior, 2014). Consequently, and as much as possible, data for this research were collected from minimum two dissimilar sources in order to give credence to the information gathered about the research variables.

### **Data Processing and Analysis**

Data were coded, edited and entered using SPSS version 20. The variable view of SPSS was used to design how the data were to be entered. Here, variable names were created to represent all the variables in the data. The data were coded by transforming data points on the research instrument into a set of numbers to allow for easy manipulation and analysis. After coding, individual data values were edited using the edit menu. Some were copied and pasted from the soft copy of the interview schedule while others were typed. Standard selection mechanisms i.e. single click for single selection, shift-click to make a sequential selection, ctrl-click to select non-consecutive cases were also used to insert, replace or add new variables. Some values were also searched and replaced after some corrections were made in the interview schedule.

The entries were made with the data view of SPSS. The data were entered according to the variable names created row by row. After the entry of each interview schedule, the data were cleaned by checking for errors. This was done by comparing what was on the interview schedule with what was on the computer screen. Once all the data were entered, frequencies were run on all of the variables to check for obscure numbers within the data (i.e. wild codes, extreme values, slides and consistencies). When any error was discovered, it was located in the data set, the name of the participant was found and referred back to the raw data to check what these were supposed to be and the correction was made. This was done to minimise the error in the data entered. With open ended items since the responses were not known before hand, they were not coded. However, in the variable view, strings were selected for such items so that the responses could be entered as they were answered on the interview schedule. The units of analyses for this research work were the following categories of actors either at the group level or as organisations on the cashew value chain: farmers, input dealers, processors, traders, banking institutions, ACi, extension and research.

Cohen *et al.*, (2007) state that quantitative data analysis is a powerful research form emanating in part from the positivist tradition. They further state that descriptive statistics describe and present data for example in terms of summary frequencies. This in their view includes for example the mode, the mean, the median, minimum and maximum scores, the range, the variance, the standard deviation, the standard error, the skewness and kurtosis. According to them, descriptive statistics make no inferences or predictions; they simply report

what has been found in a variety of ways whilst inferential statistics by contrast, strive to make inferences and predictions based on the data gathered. Quantitative data collected during the field work were analysed statistically using SPSS version 20. Both descriptive and inferential statistics were used where necessary. Table 3 shows the specific objectives, their data collection instrument(s) and the means by which their analogous data were analysed.

**Table 3: Specific objectives, data collection instrument(s) and data analysis**

Specific Objectives	Data Collection Instrument(s)	Data analysis
Specific Objective 1 To describe the characteristics and roles of key actors in the cashew value chain in the Wenchi and Techiman municipalities	Interview schedules were used to collect data from farmers, input dealers and traders. Structured questionnaires were used to collect data from purposively selected leaders of cashew unions, extension, research processors, ACi and Banks	Descriptive statistics involving frequencies, means and standard deviations. The data analysis also involved Chi-square.
Specific Objective 2 To evaluate the support system for the cashew value chain in Wenchi and Techiman municipalities in terms of: a) availability of inputs b) infrastructure and c) policy regulation	Interview schedule was used to collect data from farmers	Descriptive statistics involving frequencies, means and standard deviations. Chi-square was used mainly for the analysis
Specific Objective 3 To assess the strengthening strategies for the cashew value chain in the Wenchi and Techiman municipalities	Interview schedule was used to elicit data from cashew farmers	Descriptive statistics Involving chi-square

**Table 3 Cont'd**

Specific Objectives	Data Collection Instrument(s)	Data analysis
Specific objective 4		
To appraise the cashew value chain development processes in the Wenchi and Techiman municipalities	Interview schedule was used to collect data from farmers. Questionnaires were also used to collect data from Extension and ACi	Descriptive statistics involving chi-square
Specific objective 5		
To ascertain the level of contribution of cashew production to the livelihoods of cashew farmers in the Wenchi and Techiman municipalities as perceived by the cashew farmers themselves.	Interview schedules were used to collect data from farmers.	Descriptive statistics involving means and standard deviations.
Specific objective 6		
To recommend an Operational Framework for improving the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities	.	Pulling together conclusions of summaries from responses of the interview schedules of farmers and questionnaires from ACi, extension and other key actors as well as from the literature review.

Source: Developed by researcher (2017).

### Summary

The purpose of this research was to try to unearth the supposedly hidden challenges in the cashew value chain, develop an operational framework to improve the chain and thereby improve livelihoods of farmers in the Wenchi and Techiman municipalities. A descriptive cross-sectional survey design was used for this research. A mixed methods design was used for the empirical data

collection, using both numerical and verbal data, in order to gather rounded, reliable data. Both questionnaires and interview schedules were employed in appropriate circumstances to gather data from respondents where they live and work. Quantitative data were analysed using SPSS version 20.

The main sample consisted of male and female cashew farmers who are members of cashew unions and the Cashew Farmers' Association who cultivate cashew plantations in Wenchi and Techiman municipalities in the Brong-Ahafo Region of Ghana. Other samples from which data were collected came from input dealers, cashew processors, banks, extension, research and ACi.

This chapter presented as models of social research both qualitative and quantitative methods of data collection and analysis. The methods under each of these epistemological blocks were critically scrutinised. The mixed method was used because for some of the actors, their numbers were so low that it would not make sense to subject them to any statistical analysis. The only way was therefore to use qualitative methods to collect the necessary data on them.

No research method is sacrosanct hence all the research methods employed in the research work have their limitations. This notwithstanding, appropriate measures were employed to diligently lessen their effects on the data collected and ensure face validity, content validity and reliability. The outcomes of the data analyses are presented subsequently.

## CHAPTER FIVE

### CHARACTERISTICS AND ROLES OF MAIN ACTORS IN THE CASHEW VALUE CHAIN

#### **Introduction**

This chapter presents the results and discussions of the research data analyses on the main actors. It begins with the basic demographic characteristics of the respondent cashew farmers and spin-rolls into domains of other major actors on the cashew value chain. The chapter also looks broadly at individual actor's range of services offered on the cashew value chain and scrutinises the various roles they each claim they play to see whether they are comprehensive, whether others agree that they do what they say they do and to specifically find out what strategic areas are missing in each of their service delivery capacities. Critical shortfalls are flagged and discussed.

#### **Demographic Characteristics of cashew farmers**

Table 4 displays descriptive statistics of demographic characteristics including size of cashew plantations, distance of plantations from homes of farmers and also their household sizes. Each variable is identified and the number of respondents indicated. The minimum and maximum figures are presented alongside the means and standard deviations. The variables are then taken one at a time for discussion.

**Table 4: Demographic Characteristics of Cashew Farmers**

Variable	Number	Minimum	Maximum	Mean	Std. Dev.
Age	183	24	85	55.01	12.53
Size of cashew plantation (hectares)	186	0.12	28.00	3.37	3.51
Distance of plantations from farmers' homes (km)	186	0.75	25.60	5.33	3.89
Household size of cashew farmers	186	1	20	7.90	3.37

Source: Field Data (2017)

#### Age of Cashew Farmers

From the research results shown on Table 4, the minimum age of cashew farmers considered for the research is 24 years while the maximum is 85 years with a mean of 55 years and a standard deviation of 12.5. The mean age of 55 years is collaborated by ACA (2010) which reported the average age of cashew farmers as 54 years in Tanzania. Lawal (2011) also quoted the average age of cashew farmers in Kogi State, Nigeria as 56 years and indicated that most cashew farmers are elderly. The mean age of 55 years is, however, worrying because this means not many young people are into the business of cashew cultivation.

#### Size of Cashew Plantations

From the research results (Table 4), the minimum land size is 0.12 ha while the maximum is 28 ha. The mean land size of the cashew plantations is approximately 3.4 ha with a standard deviation of 3.5. According to Wongnaa (2013), the average cashew plantation size in the Brong-Ahafo Region is 1.3 ha.



The difference is understandable since with time, farmers expand their cashew farms. This is very much unlike field crops which have to be cultivated all over again each year. In this respect, field crops cultivated by peasants for instance can remain static for a pretty long time. In Tanzania, the farm structure is dominated by small-holders cultivating a farm size range of 0.9 to 3.0 ha (Kledal and Kwai, 2010).

#### **Distance of Cashew Plantations from Farmers' Homes (km)**

From the results on Table 4, the minimum distance of cashew plantations from the homes of farmers in the research is 0.75 km while the maximum is 25.6 km. The mean is 5.3km with a standard deviation of 3.9. The mean of 5.3 km indicates the cashew plantations are often at the outskirts of towns and villages. The cashew farm which is 0.75 km away from the farmer's home could be an old farm which was established at a time when the farmer's township had not grown big. When pressure for residential settlements become unbearable, such farms are likely to be lost. It is therefore better to establish cashew plantations further away from residential sites. Nothing was found in the literature in respect of the distance of cashew plantations from cashew farmers' homes.

#### **Educational Background of Cashew Farmers**

Often in the developing world, many farmers do not have formal education and even those who have are not high up on the educational ladder. Table 5 presents the educational situation among the cashew farmers in the Wenchi and Techiman Municipalities.

**Table 5: Educational Background of Cashew Farmers**

Highest Level of formal education attained	Frequency	Percentage
No formal education	42	23.2
Primary/JHS	111	61.3
Secondary/Vocational	25	13.8
Tertiary	3	1.7
<b>Total</b>	<b>181</b>	<b>100.0</b>

Source: Field Data (2017)

From the research results shown in Table 5, 42 of the farmers constituting 23.2 % are illiterate while 139 of them constituting 76.8% have formal education (Table 5). As many as 111 (61.3%) cashew farmers have a JHS education or lower. One hundred and fifty-three cashew farmers constituting 82.3% are either illiterate or have very low level of education. Cashew farmers who completed secondary/vocational numbered 25 constituting 13.8%. Cashew farmers with tertiary education numbered three constituting 1.7%. The high rate of formally educated persons found among the cashew farmers in the Wenchi and Techiman municipalities by this research, has positive implications for extension since it is likely that written messages and occasional thematic briefs could be read and understood without much difficulty. Additionally, formal education is generally good for development and will favour technology adoption among cashew farmers (Nhantumbo, 2017) and increase productivity (Afari, 2001).

### **Cultural Practices of Cashew Farmers**

Cultural practices in agriculture generally aid in maintenance of crops and ensure high productivity. Table 6 includes some cultural practices.

**Table 6: Cultural Practices of Cashew Farmers**

Item	Yes	%	No	%
Have you harvested before?	185	99.5	1	0.5
Do you sell your raw cashew nut (RCN) in bulk?	140	75.3	46	24.7
Do you sometimes spray insecticides on your cashew plants?	21	11.3	165	88.7
Do you sometimes spray fungicides on your cashew plants?	8	4.3	178	95.7
Do you sometimes spray weedicides on your plantation?	124	66.7	60	32.3

Source: Field Data (2017)

From the research results displayed in Table 6, cashew farmers numbering 140 and constituting 75.3% claim they sell their raw cashew nuts (RCN) in bulk. Quoting from the ACi September 2011 edition, Steering Committee Meeting Documentation Annex: 58, Heinrich (2012) stated that cashew farmers in Ghana are very fragmented, which contributes to the fact that about 68% sell their cashews individually to village buyers, thereby foregoing the higher prices they could obtain by selling in bulk through farmer associations. It can be deduced that only 32% of cashew farmers sell in bulk. This contrasts with the finding of this research which shows that 140 (75.3%) respondent farmers sell their RCN in bulk. Some farmers in Indonesia, sell their cashew before harvesting at low prices because they need fast cash (Muktasam, 2012). According to Hall, Patel, Sarmiento, Smith, Sostowski and Waxman (2007), there is also evidence of value chain finance in the forms of trader credit (pre-harvest finance), especially for

more financially precarious small producers that receive advances for the sale of their cashews.

The research results in Table 6 show that the majority of the respondent cashew farmers do not spray their farms with insecticides (88.7%) and fungicides (95.7%). Sixty-six percent of them though spray their plantations with weedicides. If these farmers would have to be led into high value markets that prefer organically produced nuts, they might have to stop using agro-chemicals so they could control the weeds manually. That majority of them did not use insecticides and fungicides make it easier if they would have to be led into these specialised high profile/value markets that pay higher fees for the cost of certified goods (IFC, 2010).

### **Type of Labour often used on Cashew Plantations**

Cashew farmers generally use manual labour (Adu, 2016) on their farms because the work is labour intensive. There is household labour and then also hired labour. Sometimes farmers use a combination of the two (Ghanaweb, August 25, 2017). What pertains among the respondent farmers is displayed in Table 7.

**Table 7: Type of Labour often used on Cashew Plantations**

Type of Labour	Frequency	Percent
Household Labour	23	12.4
Hired Labour	107	57.5
Both	56	30.1
<b>Total</b>	<b>186</b>	<b>100.0</b>

Source: Field Data (2017)

The research results show that 107 cashew farmers constituting 57.5% use hired labour (Table 7). This is followed by 56 farmers (30.1%) who use both household and hired labour. In the main, cashew farmers use family labour for some of their work. Confirming this statement, ACi (2010) states that most of these producers rely on family labour or hired labour especially for weeding and harvesting activities.

### Signing of Contracts with Buyers of Raw Cashew Nut

Contracts are business arrangements reached between buyers and sellers to protect the interest of both parties, one way or the other. Table 8 displays information in respect of farmers who have ever signed contracts with their customers.

**Table 8: Farmers who have signed Contracts before**

Status	Frequency	Percent
Yes	15	8.1
No	171	91.9
<b>Total</b>	<b>186</b>	<b>100.0</b>

Source: Field Data (2017)

Of the 186 respondents, only 15 cashew farmers constituting 8.1% claimed to have signed contracts with buyers of their raw cashew nuts before. This implies the contract concept is not widespread among cashew farmers. It is also most likely that technical knowledge about contracts is very low among them.

### Cashew Farmers' Roles in Value Addition

Value addition by farmers to any commodity increases their margins (Andrén-sandberg, 2017). Often, small scale farmers do not seem to have the necessary financial support, skills or time enough to add value to their produce. The research results on Table 9 show the role and level the respondent cashew farmers play in value addition.

**Table 9: Cashew Farmers' Roles in Value Addition**

Item	Yes	%	No	%
Drying	152	81.7	34	18.3
Bagging	168	90.3	18	9.7
Transporting	175	94.1	11	5.9
Processing	0	0	186	100
Packaging	0	0	186	100

Source: Field Data (2017)

From the results shown on Table 9, the majority of the farmers engage in drying (81.7%), bagging (90.3%) and transporting of their produce to sale points (94.1%). Thirty-four farmers constituting 18.3% claim they do not dry their produce before sales. Eighteen (9.7%) of them also constituting claim they do not bag their produce before sales. This implies cashew farmers who neither dry nor bag engage in piece meal sales. Eleven constituting 5.9% claim they do not transport what they harvest. This also implies the traders get to them on their farms or at home for their produce. Another explanation from the field and anecdotal evidence why some farmers do not dry their RCN is that loans are advanced to them by some companies with the understanding that they will pay

back with RCN. To reduce the chances of diversion by supposedly unreliable farmers, the representatives of such companies hurriedly collect the RCN from farmers to go do the drying themselves.

### Role of Input Dealers in the Cashew Value Chain as perceived by Cashew farmers

Input dealers are direct actors in the cashew value chain. In the main, they supply cashew farmers with their inputs. As they interact with cashew farmers over various activities, they create impressions on their minds. The results on Table 10 give a clearer picture.

**Table 10: Role of Input Dealers in the Cashew Value Chain as perceived by Cashew Farmers**

Item	Total		Chi-Square: Continuity correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do input dealers sometimes sell to you on credit?	(12) 6.5	(174) 93.5	0.127	0.722	1		✓
Is the quality of chemicals you buy from input dealers always genuine?	(140) 75.7	(45) 24.3	0.0004	0.948	1	✓	
Do input dealers generally, explain to you how to use the agro-chemicals they sell to you?	(131) 70.4	55 29.6	0.950	0.330	1	✓	
Do input dealers sometimes come to your farm to sell their wares to you?	(8) 4.3	(178) 95.7	2.847	0.092	1		✓

**Table 10 Cont'd**

Item	Total		Chi-Square: Continuity correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Does the input dealers' association sometimes organize educational programmes for you?	(6) 3.2	(179) 96.8	1.765	0.184	1		✓
Have you ever complained to an input dealer about the poor quality of his product before?	(7) 3.8	(179) 96.2	0.000	1.000	2		✓

Source: Field Data (2017)

From the results on Table 10, input dealers do not generally sell their wares to cashew farmers on credit. As many as 174 farmers, constituting 93.5% bore witness to this. Confirming this, Martins and Gemo (2015) wrote that agro-dealers are reluctant to sell on credit to farmers. According to 140 cashew farmers (75.7%), they do not generally have challenges with the quality of agro-chemicals they purchase from input dealers. Majority of farmers indicated that input dealers explain the use of the chemicals they purchase to them. Input dealers, however, do not go where cashew farmers live and work to sell their wares to them. The input dealers' Associations have not found it necessary to organise Technical Training sessions for farmers yet. One hundred and seventy-nine of farmers constituting 96.2% have generally never complained to input dealers about spurious agro-chemicals. This could be as a result of the weak countervailing power among farmers generally. None of the chi-square figures is significant indicating that there are no differences in the opinions of both male and female cashew farmers



for all the items in the table. The general impression among cashew farmers is that input dealers do not generally perform their roles along the cashew value chain.

### **Role of Input Dealers in the Cashew Value Chain as perceived by themselves**

Content analysis of interview schedules held with eight input dealers in the Wenchi and Techiman municipalities gives an explicit view of what respondent input dealers know about themselves as a group with respect to performing their roles along the cashew value chain.

According to the input dealers, they do not generally sell to cashew farmers on credit and when cashew farmers request to buy agro-chemicals from them, they generally ask what the buyers are going to use them for. According to the input dealers, they do not go to where the cashew farmers live and work to sell their wares to them. The input dealers also claimed that their Association sometimes organises educational programmes for cashew farmers. On the issue of whether farmers have ever complained about the poor quality of any products before, the input dealers were split in their opinion. The responses of input dealers to the last two issues presented above, however, contrast sharply with those of Table 10 where 179 cashew farmers representing 96.8% indicated that the Input Dealers Association does not organise educational programmes for them from time to time and that as claimed by 179 cashew farmers (96.2%), they have never complained to input dealers about poor quality of products.

### **Role of Input Dealers in the Cashew Value chain as perceived by Extension**

Content analysis of questionnaires administered to eleven extension officers from both the Wenchi and Techiman Municipalities gives a graphic view of what AEAs think of input dealers in respect of the performance of their roles along the cashew value chain. In the view of the extensionists, when cashew farmers request to buy agro-chemicals from input dealers, they do not ask what they are going to use them for. According to them, input dealers generally do not sell to cashew farmers on credit and that the quality of chemicals input dealers sell to cashew farmers is not always genuine. The extension officers were split in opinion in respect of whether input dealers generally explain to cashew farmers how to use the agro-chemicals they sell to them. In the view of the extensionists, input dealers do not sometimes go to cashew farmers' farms to sell their wares to them. They stated unanimously that the input dealers' Association does not sometimes organise educational programmes for cashew farmers. The extensionists also stated that some cashew farmers have ever complained to some input dealers about the poor quality of their products before.

### **Role of Cashew Processors in the Cashew Value Chain as perceived by**

#### **Cashew Farmers**

Cashew farmers interact with cashew processors along the cashew value. The research results exhibited on Table 11 show how farmers see their activities in helping develop the cashew value chain.

**Table 11: Roles of Cashew Processors in the Cashew Value Chain as perceived by Cashew Farmers**

Item	Total			Pearson's Chi-Square	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	N/A (#) & %				Yes	No
Do cashew processors sometimes come to where you live and work to buy your RCN?	(4) 2.2	(182) 97.8		0.000		1	✓	
Do you have particular cashew processors that ask you to supply them RCN?	(3) 1.6	(183) 98.4		0.000		1	✓	
Do cashew processors pay you on the spot when they buy your cashew?	(4) 2.2	(84) 45.2	(98) 52.7	0.333		2	✓	
Has any cashew processor granted you a loan for your cashew work before?	(1) 0.5	(185) 99.5		0.000		1	✓	
Do cashew processors prefer that you sell to them in bulk?	(3) 1.6	(84) 45.2	(99) 53.2	2.495		2	✓	
Has any processor organised any educational programme on cashew for you before?	(2) 1.1	(184) 98.9		0.07		1	✓	

Source: Field Data (2017)

The results show the negative experiences cashew farmers have with processors (Table 11). In their view, processors have not done anything at all to help them progress along the cashew value chain. The processors neither grant farmers loans nor organise any educational programmes for them. Equally in Tanzania, one finds that the linkages between cashew farmers and cashew processors are rather weak and limited to interactions during the cashew buying season (UNIDO, 2011). Elsewhere in the region though, the situation is quite different as shown by the following account.

According to Graham, Kaboli, Sridharan and Taleghan, (2012) in 2001, USAID and Technoserve worked in Mozambique with a local entrepreneur to refurbish a cashew processing plant so that it could begin production. Graham et al., explained that the plant bought raw cashews from several sources, one of which was direct from small farmer associations and growers. According to them, the plant worked with these growers to improve their yields, increasing their income by an average of 20% through cutting out middle men. They further hinted that this entrepreneur then provided support for other cashew processing plants, growing the sector from one to five plants in three years. These plants continue to provide support to farmers through supplying them with seedlings, teaching them quality control measures, and improving yields. According to the authors, in 2004, processors realized that farmers still needed a significant amount of assistance to improve quality and yields but to provide these services alone would be too costly for any individual firm, so they collaborated and each put in

equal investments into a firm that provided technical assistance to farmers at a small fee.

Processors particularly struggle to purchase the RCN they need for their production because they are often thrown out unprotected to compete with traders who ship the RCN out of the country. According to the respondent farmers, processors do not perform their roles along the value chain.

### **Role of Cashew Processors in the Cashew Value Chain as perceived by themselves**

In the questionnaires administered to cashew processors they gave insight into how they see themselves in various activities that help develop the cashew value chain. According to them, they sometimes go to farmers where they live and work to buy RCN from them. Processors also indicated that they have particular farmers who supply them with RCN. Cashew processors claimed that they pay cashew farmers on the spot when they purchase their cashew. Of the two processors who were interacted with, one indicated that he has granted a cashew farmer a loan for his/her cashew work before while the other said he had not done so before. On whether they prefer to buy their cashew from cashew farmers in bulk, processors were split in their response. As to whether they have as individuals organised any educational programme on cashew for cashew farmers before, both of them answered in the negative. Processors claim they have generally helped to improve work along the cashew value chain, a stand which runs counter to the views of cashew farmers about them.

### **Role of Cashew Processors in the Cashew Value Chain: AEA's perception**

The views of AEA's in respect of the activities of processors on the cashew value chain were expressed when eleven extensionists from both Wenchi and Techiman filled questionnaires administered to them. In the view of the extensionists, cashew processors do not sometimes go to farmers where they live and work to buy RCN from them. Extensionists were, however, split on whether cashew processors have particular farmers who supply them with RCN or not. They all agreed that cashew processors pay cashew farmers on the spot when they buy their cashew. This, however, runs counter to the opinions expressed by cashew farmers themselves. Extensionists were divided in their opinion on whether cashew processors ever granted any cashew farmers loans for their cashew work before. According to the extensionists, cashew processors prefer to buy their cashew from cashew farmers in bulk and they have not organised any educational programme on cashew for cashew farmers before.

### **Role of Traders on the Cashew Value Chain as perceived by Farmers**

Many traders abound in the cashew industry and currently they have become quite aggressive in plying their trade. Table 12 presents seven items which help to show whether traders perform their roles along the cashew value chain.

**Table 12: Role of Traders in the Cashew Value Chain as perceived by Farmers**

Item	Total		Chi-Square: Continuity correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do cashew traders come to where you live and work to buy your cashew?	(120) 64.5	(66) 35.5	1.037	0.308	1	✓	
Do cashew traders prefer to buy your cashew in bulk?	(161) 86.6	(25) 13.4	0.193	0.660	1	✓	
Are you satisfied with the price per kilo offered by cashew traders?	(108) 58.1	(78) 41.9	0.936	0.333	1	✓	
You do not generally, suspect the scales traders use to measure your cashew, do you?	(97) 52.2	(89) 47.8	0.040	0.841	1	✓	
Do cashew traders generally pay you on the spot?	(183) 98.4	(3) 1.6	0.000	1.000	1	✓	
Has any cashew trader offered you a loan for your cashew work before?	(25) 13.5	(160) 86.5	0.000	0.995	1		✓
Has any trader or trader's association organised any educational programme on cashew for you before?	(9) 4.9	(176) 95.1	1.274	0.104	1		✓

Source: Field Data (2017)

From the research results, the cashew farmers have cordial relations with cashew traders (Table 12). However, two major issues that could positively impact the work of farmers are not being pursued by cashew traders; they neither

assist cashew farmers with loans nor organise educational programmes for them. In support of this view, ACi wrote “Furthermore, RCN traders or exporters should be encouraged to assist in the provision of inputs to farmers, e.g. credit” (ACi, 2010). None of the chi-square figures was significant indicating that both male and female cashew farmers did not differ in their opinions for all the items.

### **Role of Traders in the Cashew Value Chain as perceived by themselves**

Traders’ views about themselves are very important and the results from the interview schedules seek to help present them. Eight items on the interview schedule helped them to undertake this self-evaluation.

From the interview schedule, traders claim they go where cashew farmers live and work to purchase their RCN. They also stated that they are satisfied with the price per kilo they offer cashew farmers and that they generally pay cashew farmers on the spot. According to cashew traders, they all purchase cashew in bits and also in bulk. Some of them indicated that they are suspicious of their own scales. The traders claim they have offered cashew farmers loans for their cashew work before. The traders claim they have also organised an educational programme for cashew farmers before. Generally, in the view of traders, they perform their expected roles along the cashew value chain.

### **Role of Traders in the Cashew Value Chain as perceived by AEAs**

The summaries of the questionnaires from extensionists give a picture of what extension thinks about traders in their interactions with cashew farmers. The views of extension on the seven items point to the general characteristics of traders.



The AEAs claimed that cashew traders go where cashew farmers live and work to buy their cashew. They also stated that cashew traders generally suspect the scale they use to measure the cashew they buy from farmers. The AEAs claimed that cashew traders generally pay cashew farmers on the spot thus confirming what the traders themselves said and what farmers also said. In the view of the AEAs, cashew traders have offered cashew farmers loans for their cashew work before. AEAs unanimously agreed that no cashew traders have organised any educational programme on cashew for cashew farmers before. This means there is still room for improvement. However, on the whole, cashew traders have generally done what is expected of them according to AEAs.

#### **Role of Banking Institutions in the Cashew Value Chain as perceived by Cashew Farmers**

Table 13 presents nine items which together help cashew farmers to indicate whether banking institutions play their roles along the cashew value chain or not.

**Table 13: Role of Banking Institutions in the Cashew Value Chain as perceived by Cashew Farmers**

Item	Total			Chi-Square: Continuity correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	N/A (#) & %				Yes	No
Has any bank visited you personally as a cashew farmer where you live and work to offer you a financial package before?	(16) 8.6	(170) 91.4		1.125	0.289	1	✓	
Was the loan amount granted you adequate?	(10) 5.4	(6) 3.3	(168) 91.3	8.067*	0.018	2	✓	
Was the loan granted at the correct time?	(12) 6.6	(4) 2.2	(166) 91.2	11.226*	0.004	2	✓	
Has any bank offered your cashew society/ union a financial package for their members before?	(35) 18.8	(151) 81.2		10.968*	0.001	1	✓	
Was the loan amount per farmer in the union/ society adequate?	(12) 6.5	(23) 12.4	(151) 81.2	6.671*	0.036	2	✓	
Did the loan to the society/union come at the correct time?	(17) 9.1	(18) 9.7	(151) 81.2	6.587*	0.037	2	✓	
Were the bank interest rates acceptable to you as a cashew farmer?	(22) 11.8	(13) 7.0	(151) 81.2	10.947*	0.004	2	✓	

**Table 13 Cont'd**

Item	Total			Chi-Square: Continuity correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	N/A (#) & %				Yes	No
Did the bank organize advisory services for beneficiary cashew farmers before granting them the loans?	(32) 17.2	(4) 2.2	(150) 80.6	13.362*	0.001	2	✓	
Are banks in the Wenchi and Techiman municipalities generally cashew farmer friendly?	(18) 9.7	(168) 90.3		5.803*	0.016	1	✓	

Source: Field Data (2017) \* indicates significance at 0.05 level

From the results, according to 170 respondents (91.4%), no banks have ever visited them where they live and work to grant them any financial packages (Table 13). Generally, those who ever applied for loans as individuals claim their loans were adequate and got to them at the correct time. Cashew farmers' responses about group loans, however, indicated the amounts were not adequate and did not get to them in time. According to 168 farmers (90.3%), the banks in the Wenchi and Techiman municipalities are not. Farmers' general impression about the nine items on Table 13 is that the banks are not doing what they should be doing to help develop the cashew value chain. All the corresponding chi-square figures for the items were significant except for the first item which asked "Has any bank visited you personally as a cashew farmer where you live and

work to offer you a financial package before?” This implies that for all the significant ones the male and female opinions on the items were different.

According to UNIDO (2011), financial institutions in Tanzania play a substantial role in the cashew value chain and with Government guarantee the National Microfinance Bank and CRDB Bank have been providing credits to primary cooperative societies for procurement of cashew nuts from farmers. UNIDO also claims processors are requiring loans for buying products and capital investments but access to financial products has been reportedly rather difficult.

A number of financial institutions have not yet succeeded in finding how best to relate to small scale farmers including cashew farmers. Consequently, not many financial packages have been designed and developed to help cashew farmers throughout the world. There is the need to strategically promote Value Chain Finance (VCF) to help cashew farmers out.

In the view of Pelrine and Besigye (2007), provision and recovery of credit is not a simple task. According to them, the lender will always face challenges of choosing the right borrower, financing the right business and recovering what has been loaned at a profit. They further stated that agriculture is often the most difficult sector to lend to because the lender's understanding of the business is often limited and information for making lending decisions is often difficult to come by.

The views expressed by Pelrine and Besigye (2007) come from conventional thoughts. In support of this assertion, Shwedel (2007) and Martinez (2006) as cited in Miller and Jones (2010) stated that conventional thinking is that

the agricultural sector is too costly and risky for lending. According to them, however, major banks in the sector such as Rabobank and Banorte which are large financial institutions in the Netherlands and Mexico respectively, both express the view that agricultural credit is profitable if producers are well integrated into a viable value chain. This underscores the importance of tightly aligned value chains. According to Boehlje, Hofing, & Schroeder (1999), forming more tightly aligned supply chains requires skills or competencies that may not be part of the traditional production and distribution systems in the agricultural industries and that one means of determining what skills are important is to study the successful supply chains in other industries.

In their view of Boehlje, Hofing, & Schroeder (1999), as a logical follow-on to the core competencies needed to form successful supply chains, there are some critical barriers that may make it difficult if not impossible to be successful in the formation or functioning of more tightly aligned supply chains in the food production and distribution industry. They further stated that these barriers or constraints are not impossible to overcome, but must be mitigated if more tightly aligned supply chains are to be successful. Some of these barriers include mutual trust by chain participants; communication and information flow across chain participants; and a policy environment that does not constrain or limit chain formation.

## **Role of Banking Institutions in the Cashew Value Chain as perceived by Banking Institutions**

A questionnaire with nine items helped respondent banks to self-evaluate bringing out the characteristics of banking institutions in their day-to-day interactions with cashew farmers.

Some banks claim they have ever visited cashew farmers where they live and work to offer them financial packages before. They, however, admitted that the loans granted were inadequate. The banks also admitted that they did not organise advisory services for beneficiary cashew farmers before granting them the loans. Some of the banks admitted openly that they are not cashew farmer friendly. This is rather distressing because the financial support of the banks in the Wenchi and Techiman municipalities is critical to the anticipated high performance of the cashew value chain. In summary, it can be stated that according to the banks themselves, they are not doing fully what they are supposed to be doing to help develop the cashew value chain.

## **Role of Banking Institutions in the cashew Value Chain as perceived by Agricultural Extension**

Through questionnaires administered to extension, the views extension holds of banking institutions as to whether they play their roles in the development of the cashew value chain or not were captured. There were nine items by which extension evaluated the banking institutions.

Extension claims that banks do not go where farmers live and work to offer them financial packages. According to extension, the loans granted cashew

farmers are inadequate and do not also come at the right time. Extension generally believes that the bank interest rates are high and not acceptable to cashew farmers. Extension claimed that the banks do not organise any advisory services for beneficiary cashew farmers before granting them loans. Finally, in the view of extension, banks in the Wenchi and Techiman Municipalities are generally not cashew farmer friendly.

### **Role of Agricultural Extension in the Cashew Value Chain as Perceived by Cashew Farmers**

Agricultural Extension is one of the main pillars of agriculture worldwide. In Ghana, in view of some critical fundamental challenges, Extension is unable to fully honour its mandate. The following sections provide insight into how respondent cashew farmers for this research work consider the shortfall in the range of services offered by Agricultural Extension and its AEAs in the Brong-Ahafo Region.

#### **On-Farm Visitation of Cashew Farmers by AEAs**

On farm visits of cashew farmers by AEAs is an important activity in the work functions of AEs. One of the ultimate goals of the extension sub-system is to maximise the number of such visitations. Table 14 features only one item which seeks to find out whether AEAs visit farmers on their cashew plantations or not.

**Table 14: On-Farm Visitation of Cashew Farmers by AEAs**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-Sided)	df	Final decision	
	Yes	No				On items	
	(#) & %	(#) & %				According to Cashew farmers	
						Yes	No
Do AEAs visit you on your cashew plantation?	111 (59.7)	75 (40.3)	2.591	0.107	1	✓	

Source: Field Data (2017)

From Table 14, 111 cashew farmers constituting 59.7% claimed AEAs visit them on their plantations while 75 (i.e. 40.3%) of them also claimed otherwise. With  $p > 0.05$  and df of 1, the views of males and females are not significantly different on the issue.

### Frequency of Visitation by AEAs

The displays in Table 15 include the number of times farmers are visited by AEAs in a month, a quarter and a year. Farmers were given many response categories in order to make it easy for them to recall the frequencies in respect of visits.

**Table 15: Frequency of Visitations by AEAs**

Visitation category	# of farmers	%	Pearson's chi square	Df	Asymp. Sig 2-sided
Five times a month	3	1.7	10.496	8	0.232
Four times a month	18	10.3	10.496	8	0.232
Three times a month	10	5.7	10.496	8	0.232
Two times a month	15	8.6	10.496	8	0.232



**Table 15 Cont'd**

Visitation category	# of	%	Pearson's	Df	Asymp. Sig
	farmers		chi square		2-sided
Once a month	21	12.1	10.496	8	0.232
Thrice a year	1	0.6	10.496	8	0.232
Twice a year	13	7.5	10.496	8	0.232
Once a year	39	22.4	10.496	8	0.232
No visits	54	31.0	10.496	8	0.232

Source: Field Data 2007

The results show that 21 cashew farmers constituting 12.0% have four or more visits per month from AEAs (Table 15). Twenty-five cashew farmers (14.3%) also have two to three visits per month. As many as 54 of the farmers constituting 31% do not get any visits at all from AEAs. Fourteen cashew farmers (8.1%) are visited by AEAs once every four to six months while as many as 39 (22.4%) also claim to be visited once per year. This means that as many as 93 respondent cashew farmers constituting 53.4% are either visited once or none at all in a whole year. This certainly is an alarming situation and calls for immediate redress by extension. The chi-square figures for all the items are not significant indicating that there were no differences in opinion between males and females on the dissimilar time frames.

The extension sub-system in Ghana looks at visitation from the point of view of the AEA and never from the perspective of the individual farmer. So when extensionists fill their monthly evaluation forms, they are supposed to indicate how many different communities they could visit (One, two or three per

month). The case of farmers who hurt because they are never visited in a whole year (31%) does not come up as a topic for extension to address because the tracking system the extension institution uses rather helps to institutionalise the smothering of them. As shown from Table 15, 93 respondent cashew farmers (53.4%) are either visited once or none at all in a whole year.

### Extension Methods used by AEAs to reach Cashew Farmers

Table 16 exhibits the various extension methods by which cashew farmers claim extensionists reach them most of the time.

**Table 16: Extension methods used by AEAs to reach Cashew Farmers**

Extension Method	Number of respondent farmers	Percentage
Field Days	56	43.4
Home Visits	37	28.7
Farm Visits	32	24.8
Demonstration	4	3.1
<b>Total</b>	<b>129</b>	<b>100.0</b>

Source: Field Data (2017)

The dominant method by which AEAs reach cashew farmers according to 56 (43.4%) of the respondent farmers is Field Days (Table 16). This is distressing because Field Days are not held frequently in the two municipalities. Home visits is the next dominant method as indicated by 37 cashew farmers constituting 28.7%. The third dominant method is farm visits indicated by 32 farmers constituting 24.8%. This statistic is worrying because the farm visits method is supposed to be dominant. The interpretation of the statistics is that AEAs do not

make visiting cashew farmers on their farms a priority. This could be because the farms are relatively far away and widely dispersed while farmers' homes could be together in specific villages. If the AEA has no means of transport or has one but is seriously handicapped by low and irregular fuel allocation for his motorbike, then the logical thing for him will be home visits (Table 16). The total number of respondents here is 129 instead of 186 showing a shortfall of 57 cashew farmers. Of the 57 cashew farmers who did not respond, 54 were those who were never visited in a year by AEAs.

### Cashew Farmers' Preferred Extension Method

The research results on Table 17 show the most preferred extension method by cashew farmers from among a list of four. Majority of these farmers convincingly selected one choice as their preferred option.

**Table 17: Cashew Farmers' Preferred Extension Method**

Extension Method	Number of respondent farmers	%
Farm Visits	153	83.61
Home Visits	18	9.84
Demonstration	7	3.82
Field Days	5	2.73
<b>Total</b>	<b>183</b>	<b>100.0</b>

Source: Field Data (2017)

The results show that for 153 respondents constituting 83.6%, cashew farmers' most preferred extension method is farm visits (Table 17). This finding

is collaborated by Oakley and Garforth (1985) who stated that farm visits are the most common form of personal contact between the agent and the farmer and often constitute over 50% of the agent’s extension activities. The next is Home visits and that is selected by only 18 farmers constituting 9.8%. It is evident from Tables 16 and 17 that the extension method used by AEA’s in respect of visitation is contrary to the preference of cashew farmers.

**The Range of Extension Information Delivery as Perceived by Cashew Farmers in the Cashew Value Chain**

Table 18 features 15 questions the responses to which give insight into respondent cashew farmers’ views on a wide range of roles needed to be performed by AEA’s.

**Table 18: The Range of Extension Information Delivery as Perceived by Farmers in the cashew value chain**

Item	Total		Chi-Square: Continuity correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do you feel free to put questions that bother you about your cashew to AEA’s?	(117) 62.9	(69) 37.1	8.573*	0.003	1	✓	
Do AEA’s always have ready answers for your questions?	(108) 58.1	(78) 41.9	8.128*	0.004	1	✓	
Do AEA’s regularly bring you new information on cashew?	(88) 47.3	(98) 52.7	6.644*	0.010	1		✓
Have you been invited by AEA’s to attend any workshop in the past two years?	(72) 38.7	(114) 61.3	9.890*	0.002	1		✓

**Table 18 Cont'd**

Has any AEA carried any of your production challenges to research before?	(15) 8.1	(171) 91.9	2.156	0.142	1	✓
Have you received any research information from any AEAs in the past one year?	(29) 15.6	(157) 84.4	5.167*	0.023	1	✓
Whenever there is an outbreak of disease in the cashew industry, do you receive timely information or what we call action alerts from AEAs?	(89) 48.4	(95) 51.6	1.526	0.217	1	✓
Do you receive from AEAs customized information (also called thematic briefs) on cashew production techniques?	(106) 57	(80) 43.0	1.134	0.287	1	✓
Do you receive information from AEAs for the management of your cashew farms?	(113) 60.8	(73) 39.2	4.620*	0.032	1	✓
Do you receive information on family living (sanitation/procreation/sib-ship/clothing of children/how to take care of invalids/ etc.) from AEAs?	(48) 25.8	(138) 74.2	0.954	0.329	1	✓
Has any AEA carried any of your production challenges to research before?	(15) 8.1	(171) 91.9	2.156	0.142	1	✓

**Table 18 Cont'd**

Item	Total		Chi-Square: Continuity correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Have you received any research information from any AEAs in the past one year?	(29) 15.6	(157) 84.4	5.167*	0.023	1		✓
Whenever there is an outbreak of disease in the cashew industry, do you receive timely information or what we call action alerts from AEAs?	(89) 48.4	(95) 51.6	1.526	0.217	1		✓
Do you receive from AEAs customized information (also called thematic briefs) on cashew production techniques?	(106) 57	(80) 43.0	1.134	0.287	1		✓
Do you receive information from AEAs for the management of your cashew farms?	(113) 60.8	(73) 39.2	4.620*	0.032	1		✓
Do you receive information on family living (sanitation/procreation/sib-ship/clothing of children/how to take care of invalids/ etc.) from AEAs?	(48) 25.8	(138) 74.2	0.954	0.329	1		✓
Do you receive any agro-input advice from AEAs?	(99) 53.2	(87) 46.8	0.886	0.346	1		✓

**Table 18 Cont'd**

Item	Total		Chi-Square: Continuity correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do you get clear policy directives from extension to direct your work as a cashew farmer?	(60) 32.4	(125) 67.6	0.095	0.757	1	✓	
Do you receive marketing information support from AEAs for your cashew business?	(7) 3.8	(179) 96.2	0.503	0.478	1	✓	
Do you get financial credit support from others through extension for your cashew business?	(11) 5.9	(175) 94.1	0.648	0.421	1	✓	
Have AEAs taught you how to harvest your cashew?	(119) 64.0	(67) 36.0	4.825*	0.028	1	✓	

Source: Field Data (2017) \* indicates significance at 0.05 level

From the results, one hundred and seventeen farmers (69%) claim they feel free to put their questions to AEAs (Table 18) and that is a plus for extension. The corresponding chi-square figure of 8.753 is significant indicating that there is a significant difference ( $p < 0.05$ ) between male and female farmers on this point. Relatively, many men are more willing to interact with AEAs who are mostly men. The Muslim factor in Techiman and Wenchi municipalities could be responsible for this difference since female cashew farmers who are Muslims will be hesitant to approach male AEAs. The details of the statistics indicate that as many as 78 of the respondent farmers constituting 41.9% do not always have

ready answers from AEAs. A hundred and eight farmers constituting 58.1% claim that AEAs have ready answers for their questions. With  $p < 0.004$  and a significant chi-square figure of 8.128, this means male and female responses differ significantly here. What is worrying is that for the past two years, 114 farmers claim they have not been invited to attend any workshops. The chi-square value of 9.890 is significant here indicating a significant difference in opinion in respect of the stand of females and males. Ninety-eight farmers (52.7%) also indicated AEAs do not bring them new information on cashew regularly. This has a significant chi-square figure of 6.444.

According to 171 of the respondent cashew farmers constituting 91.9%, no AEA has carried any of their production challenges to research before. In this particular issue both male and female cashew farmers are unanimous in their claim. Quite important is the fact that 106 cashew farmers constituting 57% receive thematic briefs from AEAs. This notwithstanding, extension needs to step up its service delivery capacity with respect to Family Living programmes. This is a core mandate of extension but it seems many of the AEAs do not place much value on its significance. One hundred and thirty-eight respondent farmers (74.2%) stated they do not receive information on family living from AEAs. Marketing and policy items need to be tackled by extension if their contribution to farmers' efforts along the cashew value chain is to be felt. One hundred and twenty-five (67.6%) respondent farmers indicated that they do not get clear policy directives from extension to direct their work as cashew farmers. One hundred and seventy-nine cashew farmers constituting 96.2% said they do not receive



market information support from AEAs for their cashew business. As many as 175 (94.1%) also claimed they do not get financial credit support from others through extension for their cashew business. In conclusion, respondent farmers think extension has generally not performed its chores adequately to help develop the cashew value chain.

Similarly, in Tanzania, according to UNIDO (2011), the existing extension services that are supposed to reach farmers are inadequate, erratic and discontinued. In consequence, farmers lack information that would enable them to improve their production, apply proper agronomic techniques, apply pesticides in the right dose, be productive and produce cashew nuts efficiently and be able to run cashew nut production as a viable commercial business. The situation is not surprising because a worldwide review of extension services shows that the impact of extension services on rural livelihoods is mixed: very high rates of return in some cases and negligible achievements in other cases (Rivera, Qamar and Crowder, 2001; Anderson and Feder, 2007).

### **Role of Extension in the Cashew Value Chain as perceived by AEAs**

The role of Extension in agriculture is immense and its significance in developing countries cannot be underestimated. Extension is supposed to support all the crop value chains including cashew in Ghana. The following account shows what extension thinks of itself in respect of the range of services it performs in helping to develop the cashew value chain in the Wenchi and Techiman municipalities. The collective responses provided in the following

paragraphs were at the instance of a questionnaire administered to AEAs at Wenchi and Techiman townships.

According to the AEAs, they feel free to receive questions that bother farmers about their cashew and that they always have ready answers for cashew farmers' questions. The AEAs claim they regularly bring farmers new information on cashew and they have in the past two years invited cashew farmers to attend cashew workshops. One of their weaknesses, they claim, is the fact that most of them have never carried any cashew farmer's production challenges to research before though they have in the past one year given research information to farmers.

According to the AEAs, whenever there is an outbreak of disease in the cashew industry, they give farmers timely information (or what we call action alerts). The extensionists claim they provide farmers with customised information (also called thematic briefs) on cashew production techniques and in addition give information to cashew farmers for the management of their cashew farms. The AEAs were however divided in their opinion about whether they give information on Family Living (sanitation/procreation/sib-ship/clothing of children; and how to take care of invalids) to cashew farmers.

The AEAs claimed they give agro-input advice to cashew farmers but do not give clear policy directives to cashew farmers to direct their work. According to the AEAs, they have taught farmers how to harvest their cashew and also give marketing information support to cashew farmers for their cashew business. The AEAs admitted farmers do not get financial credit support from others through

extension for their cashew business. The responses of the AEAs indicate that they generally do what they are supposed to do to help with the development of the cashew value chain.

### **Role of Extension in the Cashew Value Chain as perceived by Research**

In respect of four questions among a set of fifteen which were put to five researchers at the Wenchi Agricultural Research Station, the researchers gave negative responses. These included whether EAs always have ready answers for cashew farmers' questions; whether cashew farmers get clear policy directives from extension to direct their work as cashew farmers; whether cashew farmers receive marketing information support from AEAs for their cashew business; and finally whether cashew farmers get financial credit support from others through extension for their cashew business. All the researchers were unanimous on four items saying "yes" for each. The items were whether farmers feel free to put questions that bother them about their cashew to AEAs; whether cashew farmers have been invited by AEAs to attend any workshop in the past two years; whether any AEA carried any cashew farmer's production challenges to research before; and also whether cashew farmers receive information from AEAs for the management of their cashew farms.

According to the researchers, AEAs regularly bring cashew farmers new information on cashew and as to whether any cashew farmer received any research information from any AEAs in the past one year, they were very positive. The researchers claimed that whenever there is an outbreak of disease in the cashew industry, cashew farmers receive timely information or what we call

action alerts from AEAs. They also claimed that cashew farmers receive from AEAs customised information (also called thematic briefs) on cashew production techniques.

In the view of the researchers, cashew farmers receive any agro-input advice from AEAs who have also taught them how to harvest their cashew. The researchers were, however, divided in their views on whether cashew farmers receive information on family living which includes sanitation, procreation, sibship, clothing of children and how to take care of invalids from AEAs or not. On the whole, researchers believe extension is on track in respect of helping to develop the cashew value chain.

### **Role of Research in the Cashew Value Chain as perceived by Cashew**

#### **Farmers**

Table 19 features seven items and displays the choices that farmers made from the accompanying response categories to help evaluate the work of research with respect to the development of the cashew value chain.

In response to the question whether cashew farmers have received any information from research on cashew through extension in the past two years, 182 out of 186 farmers said “No” (Table 19). This is not good news for development of the cashew value chain. According to all 186 respondents they have never been invited to a research station for interaction with researchers before. None of them also has a researcher as a friend.

**Table 19: Role of Research in the Cashew Value Chain as perceived by Cashew Farmers**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Have you received any information from research on cashew through extension in the past two years?	(4) 2.2	(182) 97.8	0.024	0.877	1		✓
Have you been invited by researchers for interactions at a research station before?	(0) 0	(186) 100	No statistics computed		0		✓
Did you have researchers as close allies before you started harvesting your cashew?	(0) 0	(186) 100	No statistics computed		0		✓
Did researchers make you aware of what type of RCN makes the most money on the world market before you planted your cashew?	(1) 0.5	(185) 99.5	0.117	0.733	1		✓
Did researchers influence the planting materials, you selected for establishing your cashew plantation?	(1) 0.5	(185) 99.5	0.117	0.733	1		✓
Has any researcher visited your cashew plantation before?	(1) 0.5	(185) 99.5	0.117	0.733	0		✓
Has any researcher talked with you about your cashew production before?	(0) 0	(186) 100	No statistics computed				✓

Source: Field Data (2017)

\* indicates significance at 0.05 level

According to 185 of the respondent farmers constituting 99.5%, researchers did not influence the planting materials they selected for establishing their cashew plantations. From Table 19, it can be concluded that all the items were answered negatively by large numbers of farmers ranging between 182 (97.8%) and 186 (100%). Some farmers, however, obtain their production knowledge through colleague farmers. In a research work undertaken in Nigeria by Agbongiarhuoyi, Uwagboe, Ibiremo, Olasupo and Aigbekaen (2015), majority of respondents obtained cashew planting materials from fellow farmers and their own farms and got information on cashew cultivation from fellow farmers. From the results shown on Table 19, there is simply no relationship between cashew farmers in the Wenchi and Techiman Municipalities and researchers. It can therefore be inferred that researchers are not doing what they are supposed to do to help develop the cashew value chain.

#### **Role of Research in the Cashew Value Chain as perceived by itself**

The following is the result of the research sub-system evaluating itself with respect to helping develop the cashew value chain. According to the researchers, they have given research information through extension for farmers before. They claim they have also invited cashew farmers for interactions at a research station before. The researchers also claim they have some cashew farmers as close allies before they started harvesting their cashew. According to the researchers, they make cashew farmers aware of what type of RCN fetches the most money on the world market before they plant their cashew and they also influence the planting materials farmers select for establishing their cashew plantations. They claim they

have visited farmers' cashew plantations before and have talked with farmers about their cashew production before.

From the results, researchers claim they observe all that they need to do to keep the cashew value chain development on track. Their claims, however, run contrary to all the views cashew farmers' hold of them (Table 19)

### **Role of Research in the Cashew Value Chain as perceived by Extension**

The following is a report from a questionnaire that featured seven items which were answered by AEAs. The AEAs, researchers and farmers belong to the same two-way communication triad and therefore know themselves quite well. Extensionists generally claim they have not received any information from research on cashew for cashew farmers in the past two years and that cashew farmers have not been invited by researchers for interactions at a research station before.

According to extension, researchers did not have cashew farmers as close allies before they started harvesting their cashew. They also claim researchers did not make cashew farmers aware of what type of RCN fetches the most money on the world market before they planted their cashew. In the view of extension, researchers did not influence the planting materials cashew farmers selected for establishing their cashew plantations. Extensionists were split in their opinion on the issue of whether researchers visit the cashew plantations of farmers and whether they have ever talked with cashew farmers about their cashew production before.

The views of cashew farmers (Table 19) as well as the views of extension agree on five points about research. This means farmers' views and those of extensionists about the research sub-system are similar on five out of seven points. On the last but one-point majority of farmers numbering 185 (99.5%) claimed no researcher has ever visited any of their plantations before. Then also on the last point all 186 respondent farmers (100%) filed negative indicating that no researcher has talked with them about their cashew production before. The general conclusion is that research is not playing its role in helping to develop the cashew value chain.

### **Role of ACi in the Cashew Value Chain as Perceived by Leadership of Cashew Farmers**

From interview schedules and focus group interviews held with respondent leaders of the cashew farmers in both Wenchi and Techiman municipalities, the two groups were of the same opinion on all 14 points in the interview schedule. According to the results, ACi helps to train them and improve their competitiveness in the cashew value chain. ACi helps to get them organised into groups and also works to ensure they have stable and sustainable business relationships. The farmers indicated that ACi engages in improved cashew planting material development, encourages weeding and pruning on cashew plantations. ACi, according to them, encourages intercropping food crops with cashew and promotes the construction of fire belts around cashew plantations. In the view of the farmers, ACi helps them increase cashew production and helps them meet international quality standards. They explained how ACi provides



them with advice and training on many stages of the production process. In the view of the leadership, however, ACi does not link them to local and international markets.

### **Summary**

The mean age of cashew farmers is 55 years while the mean land size of their cashew plantations is approximately 3.4 ha. Majority of farmers use hired labour on their cashew farms. The general impression among cashew farmers is that input dealers do not generally perform their roles along the cashew value chain. Processors particularly struggle to purchase the RCN they need for their production because they are often thrown out unprotected to compete with traders who ship the RCN out of the country. Cashew farmers claim processors do not perform their roles along the value chain. According to the cashew farmers, the banks in the Wenchi and Techiman municipalities are not cashew farmer friendly. The banks themselves claim they are not doing fully what they are supposed to be doing to help develop the cashew value chain.

Cashew farmers' most preferred extension method is farm visits which is contrary to the preferred extension method of AEAs. Cashew farmers think Extension has generally not performed its chores adequately to help develop the cashew value chain. There is simply no relationship between cashew farmers and researchers. According to them, researchers are not doing what they are supposed to do to help develop the cashew value chain. The Leadership teams of the cashew farmers in both Wenchi and Techiman municipalities were very appreciative of the contributions of ACi to the development of the cashew value

chain. However, according to them, ACi does not link them to local and international markets.



## CHAPTER SIX

### SUPPORT SYSTEM AND STRENGTHENING STRATEGIES FOR THE CASHEW VALUE CHAIN

#### Introduction

In this research work, the Support System for the cashew value chain is considered as a three-pronged entity with the following components: availability of inputs; infrastructure; and policy. The availability of inputs has five sub-components namely, knowledge and skills; extension; capital; raw materials; and market. Infrastructure also has one sub-component that is relevant to the study namely, physical infrastructure. Policy, on the other hand, is looked at from its comprehensiveness in the cashew value chain. The components of the strengthening strategies include awareness-raising; capacity building; the research sub-system; information sharing; public policy dialogue; and partnership building. The current states of affairs of the components of the support system and the strengthening strategies are looked at in this chapter.

#### Availability of Inputs

The availability of inputs has five components namely, knowledge and skills; extension; capital; raw materials; and market. Their analyses are presented in the same order in the following section.

*Availability of Cashew Knowledge and Skills*

Table 20 features 14 items whose responses help to establish whether cashew knowledge and skills are available among cashew farmers.

**Table 20: Availability of Cashew Knowledge and Skills**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
The need for cashew farmers to use planting materials from extension-approved clonal nurseries	(166) 89.2	(20) 10.8	5.586*	0.018	1	✓	
Used it before?	(58) 34.5	(110) 65.5	0.954	0.329	1		✓
Techniques for the preparation of enhanced compost in two weeks	(137) 73.3	(49) 26.3	1.043	0.307	1	✓	
Used it before?	(44) 31.9	(94) 68.1	0.359	0.549	1		✓
Techniques for selecting grafting materials	(109) 58.6	(77) 41.4	2.906	0.088	1	✓	
Used it before?	(64) 58.7	(45) 41.3	0.539	0.463	1	✓	
Techniques of Grafting	(109) 58.9	(76) 41.1	3.644	0.056	1	✓	
Used it before?	(70) 64.2	(39) 35.8	0.000	1.000	1	✓	
Techniques of canopy substitution	(115) 62.2	(70) 37.8	0.045	0.832	1	✓	

**Table 20 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	Df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Used it before?	(70) 64.2	(39) 35.8	0.000	1.000	1	✓	
Techniques of canopy substitution	(115) 62.2	(70) 37.8	0.045	0.832	1	✓	
Used it before?	(88) 77.2	(36) 22.8	3.526	0.060	1	✓	
Techniques of coppicing interlocked canopies	(185) 99.5		0.117	0.733	1	✓	
Used it before?	(175) 94.6	(10) 5.4	0.344	0.558	1	✓	
Top working machine available at MoFA office	(134) 72.0	(52) 28	2.846	0.092	1	✓	
Used it before?	(13) 9.7	(121) 90.3	0.000	1.000	1		✓

Source: Field Data 2017 \* indicates significance at 0.05 level

Of the first item, farmers numbering 166 and constituting 89.6% are aware of the need to use seedlings from clonal nurseries. The corresponding chi-square figure, 5.586 is significant indicating a difference in opinion, though between male and female cashew farmers. A figure of 110 farmers, constituting 65% have used it before (Table 20). One hundred and nine farmers also constituting 58.6% are familiar with techniques for selecting grafting materials. Another 109 cashew farmers constituting 58.9% are also familiar with techniques of grafting. This

confirms what MoFA has been engaged in for a number of years now, canopy substitution (GNA, 10 June, 2005). From Table 20, it is evident that cashew knowledge and skills are generally available among cashew farmers. On the contrary and according to Apantaku, Oloruntoba, and Fakoya (2003) as cited in Wasihun, 2010), majority of cashew farmers do not even have any idea about the yield potential of the cashew tree when best cultural practices are employed.

### ***Extension Support***

According to both the extension subsystem and the research subsystem, extension support is on track because extension is generally doing what it is supposed to do to support the cashew value chain. However, since the farmers are the ultimate beneficiaries of AEAs' performance, their views carry more weight and should have priority over other views. Consequently, according to the respondent cashew farmers as shown on Table 18 extension is not doing what it is supposed to do to help develop the cashew value chain. In times past, Rivera (1991) made a similar statement when he wrote that public sector extension in the 1980s was criticized for not doing enough, not doing it well and for not being relevant. These views have in more recent times been shared by Umali-Feininger and Schwartz (1994).

### ***Availability of Financial Support to Cashew Farmers in the Cashew Value***

#### ***Chain***

Table 21 features 11 items that help to find out whether financial support is available to cashew farmers on the cashew value chain.

**Table 21: Availability of Financial Support to Cashew Farmers in the Cashew Value Chain**

Item	Total		N/A	Pearson's Chi-Square	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#) & %					Yes	No
Are financial resources available from some banks for cashew farmers in the Wenchi-Techiman Municipals?	(25) 13.4	(161) 86.6		3.248	0.072	1		✓
Are some financial packages available occasionally to cashew farmers from government?	(2) 1.1	(184) 98.9		0.071	0.790	1		✓
Are some financial packages available occasionally to cashew farmers from some NGOs?	(1) 0.5	(185) 99.5		0.000	1.000	1		✓
Have you received a bank loan before?	(22) 11.8	(164) 88.2		3.594	0.058	1		✓
Was the loan granted you by the bank adequate for your work?	(14) 7.5	(8) 4.3	(164) 88.7	5.286	0.071	2		✓
Are you aware of any special bank arrangements that help cashew farmers pay back their loans promptly?	(9) 4.8	(177) 95.2		3.385	0.066	1		✓
Are there cordial relationships between financial institutions and cashew farmer's in the Wenchi-Techiman Municipals?	(16) 8.6	(170) 91.4		7.388*	0.007	1		✓
Do cashew farmers enjoy special privileges at banking institutions in the Wenchi-Techiman Municipals?	(3) 1.6	(183) 98.43		0.403	0.526	1		✓

**Table 21Cont'd**

Item	Total			Pearson's Chi-Square	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#) & %	N/A				Yes	No
Do cashew farmers receive loans for their cashew production at the correct time?	(13) 7.0	(10) 5.4	(163) 87.6	10.465	0.005	2	✓	
Do some banks in the Wenchi-Techiman Municipals educate beneficiary cashew farmers on how best to use the monies before granting them loans?	(4) 2.2	(19) 10.2	(163) 87.6	2.141	0.343	2	✓	
Do some banks in the Wenchi-Techiman Municipals educate farmers on the negative implications of defaulting in loan repayment?	(16) 8.6	(7) 3.8	(163) 87.6	9.076*	0.011	2	✓	

Source: Field Data (2017) \* indicates significance at 0.05 level

From the results shown on Table 21, it is evident from the cashew farmers that generally there are no special financial resources set aside for them from either government (empirical data from 184 cashew farmers constituting 98.9%) or banks in the region (empirical data from 161 cashew farmers constituting 86.6%). Interestingly, evidence from 185 farmers constituting 99.5% of them also indicated that there are no such financial facilities from NGOs. Some years back though, the Bill and Mellinda Gates Foundation provided \$48 million for five years in grants to help hundreds of thousands of small scale cocoa and cashew farmer in sub-Saharan Africa to significantly increase their incomes so they can lift themselves out of hunger and poverty (GNA, February 18, 2009). Of all the



186 cashew farmers, only 22 constituting 11.8% claim to have received a loan before. It is on record also that the Suma Rural Bank has created a product called Cashew Farmers Special Account (CaFSA) that enables cashew farmers to improve upon their farms and also assist their children's education (Suma Rural Bank, 2016). There are financial support services to the value chain such as insecticide spraying for instance in Mozambique (ACi, 2011). Some farmers in Ghana also benefitted from a \$22 million interest-free short term financing under the Olam Livelihood Charter (OLC) of global agribusiness giant Olam International (Agricinghana Media, 2017). There are no special programmes that help farmers pay back their loans with ease and generally from the research results, there are no cordial relationships between cashew farmers and financial institutions in the Wenchi and Techiman municipalities. Chi-square tests for independence performed to check whether differences in the items are independent of sex revealed that in three items there is significance ( $p < 0.05$ ) whereas in eight items there are no significant differences ( $p > 0.05$ ) between females and males in opinions on the items. In the literature, the researcher could not find studies that either support or contradict the relationships. Generally, it can be concluded that financial support is not available to cashew farmers of the cashew value chain in the Wenchi and Techiman municipalities.

#### ***Availability of Raw Materials for Cultivating Cashew***

Table 22 has 13 items that together help find out whether raw materials for cultivating cashew are generally available to cashew farmers.

**Table 22: Availability of Raw Materials for cultivating Cashew**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#)& %				Yes	No
Is land for cashew cultivation easily available in the Wenchi and Techiman Municipalities?	(57) 30.6	(129) 69.4	1.152	0.283	1		✓
Is land tenure well managed in the Wenchi and Techiman Municipalities?	(139) 74.7	(47) 25.3	0.318	0.573	1	✓	
Is land for cashew cultivation quite cheap in the Wenchi and Techiman Municipalities?	(35) 18.9	(149) 80.5	3.562	0.168	1		✓
Are cashew seedlings available for sale at private extension-approved clonal nurseries in Wenchi-Techiman Municipals?	(152) 81.7	(34) 18.3	1.462	0.227	1	✓	
Are cashew clonal seedlings sold at the private extension-approved nurseries in Wenchi and Techiman Municipalities expensive?	(138) 74.2	(48) 25.8	1.771	0.183	1	✓	
Are agro-chemicals for cashew cultivation available in Wenchi-Techiman Municipals?	(176) 94.6	(10) 5.4	0.371	0.542	1	✓	
Is there an agro-chemical shop in the area where you live that serves the needs of your cashew crops?	(102) 54.8	(84) 45.2	0.000	0.988	1	✓	

**Table 22 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#)& %				Yes	No
Have the agro-chemicals you have purchased so far for your cashew been genuine ones?	(148) 79.6	(38) 20.4	0.020	0.887	1	✓	
Was there sufficient rain water for your cashew seedlings at transplanting?	(152) 81.7	(34) 18.3	0.166	0.684	1	✓	
Is there a shop from which you can buy compost for your cashew plants?	(7) 3.8	(178) 95.7	2.042	0.360	2		✓
Has there so far been sufficient rain water for your established cashew plantation?	(108) 58.1	(77) 41.4	2.027	0.363	2	✓	
Is the cost of labour for work on your cashew plantation financially manageable?	(100) 53.8	(85) 45.7	2.577	0.276	2	✓	✓

Source: Field Data (2017)

Of all 13 items on Table 22, there is none for which the two sexes differed in the proportion of their opinions. This is evident upon the statistics where  $p > 0.05$ . According to 129 respondents (69.4%), land for cashew is not easily

available. But then 139 (74.7%) claimed that land tenure is well managed in the locality. Land, according to respondents, is not cheap but seedlings from clonal nurseries are available. Labourers are easily available for hire to work on the cashew plantations in the project area and there is sufficient rainwater for their crops and agro-chemical shops are available in the communities. Generally, as shown in Table 22, raw materials for cultivating cashew are available in the Wenchi and Techiman Municipalities.

***Availability of the Local Market to Cashew Farmers***

Table 23 shows whether the local market is available to cashew farmers or not. Nine items help to do this assessment.

**Table 23: Availability of the Local Market to Cashew Farmers in the Wenchi and Techiman Municipalities**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#)& %				Yes	No
Do you get market prices of cashew through the radio?	(39) 21.1	(146) 78.9	0.047	0.828	1	✓	
Do you by yourself have sufficient information about where to get the best selling prices for your cashew nut?	(107) 57.8	(78) 42.2	0.852	0.356	1	✓	
Is there a system that helps farmers each year to determine the kilo price for cashew?	(21) 11.3	(165) 88.7	1.636	0.201	1	✓	

**Table 23 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#)& %				Yes	No
Is the cashew market easily accessible such that you can sell your RCN to anybody of your choice?	(168) 90.3	(18) 9.7	0.098	0.754	1	✓	
Is there a cashew warehouse where cashew farmers can stock pile their RCN till the kilo price appreciates significantly?	(5) 27	(181) 97.3	1.307	0.253	1	✓	
Do you know what specifications your cashew customers want?	(140) 75.3	(46) 24.7	6.174*	0.013	1	✓	
Do you produce to meet the expectations of your cashew customers?	(136) 73.1	(50) 26.9	2.544	0.111	1	✓	
Do you receive information on cashew markets on your mobile phone?	(48) 25.8	(138) 74.2	0.000	1.000	1		✓
Do you get transport easily to cart your RCN to cashew sale points?	(180) 96.8	(6) 3.2	0.000	1.000	1	✓	

Source: Field Data (2017)

\* indicates significance at 0.05 level

Radio is one means of communication by which many farmers can be reached most of the time. From the results, 146 farmers constituting 78.9% claim they do not get market prices of cashew through radio while another set of 138 farmers (74.2%) indicated that they do not receive SMS messages on their cell phones in respect of cashew markets (Table 23). A hundred and seven of the respondents (57.8%), however, indicated that they by themselves have sufficient information about where to get the best selling prices for their RCN. According to 165 of them (88.7%), there is no system in place that helps them to determine the kilo price of cashew each year. The cashew market according to 168 of them (90.3%), is easily available such that they can sell their RCN to just anyone of their choice. None of the chi-square values were significant except for the item, "Do you know what specifications your cashew customers want?" which had a figure of 6.174. There were therefore no differences in opinions between males and females for those items whose corresponding chi-square figures were not significant.

There is, however, no cashew warehouse according to 181 (97.3%) of them where they can store their RCN till the kilo price appreciates significantly. ACi (2010) states that cashew farmers generally have no proper storage facilities and no transport facilities as confirmed by Große-Rüschkamp & Seelige (2010). On the contrary, however, in the view of 180 of the respondent farmers constituting 96.8%, transportation to cart their RCN to weighing centres is not a problem. In summary therefore, four critical items in respect of the availability of the local market were all in the main answered negatively by farmers as shown on

Table 23. That is whether cashew farmers get market prices of cashew through the radio; whether there is a system that helps farmers each year to determine the kilo price for cashew; whether there is a cashew warehouse where cashew farmers can stock pile their RCN till the kilo price appreciates significantly; and whether they receive information on cashew markets on their mobile phones. This implies that though the local market is available, the critical things which will cause it to be well established and competitive are unavailable.

***Availability of International Markets to Cashew Farmers***

Table 24 presents results that tell whether international markets are available to local cashew farmers. It features five items.

**Table 24: Availability of International Markets to Cashew Farmers**

Item	Total			Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	Don't know				Yes	No
Is there an office known to you in the Brong-Ahafo from which you can get information about international cashew trade?	(17) 9.1	(59) 31.7	(110) 59.1	4.277	0.118	2	✓	
Is there any designated government or private office in the Brong-Ahafo that advises cashew farmers on foreign cashew trade?	(2) 1.1	(94) 50.5	(90) 48.4	4.750	0.093	2	✓	

**Table 24 Cont'd**

Item	Total			Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	Don't know				Yes	No
Have you received training in how to get foreign contacts for cashew trade?	(1) 0.5	(183) 98.4	(2) 1.1	2.208	0.331	2	✓	
Have you ever been trained in how to engage in international cashew trade?	(0) 0	(185) 99.5	(1) 0.5	0.000	1.000	1	✓	
Will you want to participate in international trade of cashew?	(177) 95.2	(8) 4.3	(1) 0.05	2.022	0.364	2	✓	

Source: Field Data (2017)

From the results, even though 177 farmers constituting 92.5% expressed desire to participate in international trade of cashew (Table 24), there are no structures on the ground to help the farmers realise this. They do not know of any office in the Brong-Ahafo from which they can get information about international cashew trade. According to 185 of them constituting 99.5%, they have no training in how to engage in international cashew trade for instance. None of the chi-square figures showed significance indicating that there were no differences in opinions of males and female cashew farmers.

The numerous small scale cashew farmers throughout the cashew producing regions of the world do not seem to have any significant bargaining



powers. For example, in 2007, producers in Southern Guinea-Bissau only received \$0.20 per kilogram for raw cashew nuts while one kilogram of processed cashews was being sold for more than \$4 in the United States (Boillereau, Adam and de Cock, 2007). Although processing adds a great deal of value, small cashew growers in Guinea-Bissau often have no interest in it since it is labour intensive with no international buyers looking for processed nuts in the country (Lekberg, 1996). From Table 24, it is obvious that generally, international markets are not available to cashew farmers in the Wenchi and Techiman municipalities.

***Availability of the requisite Physical Infrastructure to Cashew Farmers for the Development of the Cashew Value Chain***

Physical infrastructure has great influence on the development of an industry. Storage facilities and mobile telephony are some of the components of physical infrastructure. Table 25 presents five items which together help to determine whether the requisite physical infrastructure for development of the cashew value chain is available to cashew farmers.

The research results display components of infrastructure with respect to the development of the cashew value chain namely road including its availability and state; storage facilities; and telephony (Table 25). One hundred and fifty-nine respondents constituting 85.5% have roads close to their plantations. Mobile telephony is not a problem for the farmers since 156 of them (83.9%) can communicate on their farms with others outside their plantations.

**Table 25: Availability of the requisite Physical Infrastructure to Cashew Farmers for the Development of the Cashew Value Chain**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) &%	No (#) &%				Yes	No
Is there a road close to your cashew plantation?	(159) 85.5	(27) 14.5	0.024	0.876	1	✓	
Is the closest road to your cashew plantation within walking distance?	(173) 93.0	(13) 7.0	0.003	0.953	1	✓	
Is the closest road to your plantation generally in good condition?	(109) 58.6	(77) 41.4	0.199	0.655	1	✓	
Are there any government storage facilities for cashew in your community?	(5) 2.7	(181) 97.3	2.994	0.084	1		✓
Can you communicate with others through your mobile phone from your cashew plantation?	(156) 83.9	(30) 16.1	3.340	0.068	1	✓	

Source: Field Data (2017)

Both sexes did not differ in their opinions in any of the components of infrastructure because for each of them  $p > 0.05$ . This means none of the chi-square figures was significant. Provision of storage facilities is a major service in the

development of infrastructure but this is missing in the Wenchi and Techiman municipalities.

There is a whole cashew infrastructure development project in Zambia (CIDP, 2015) and Ghana can aggressively pursue a similar thing to provide the kind of infrastructure we need.

Generally, physical infrastructure necessary for the development of the cashew value chain is partially developed in the Wenchi and Techiman municipalities.

***Comprehensiveness of the Range of Policies Offered in the Cashew Value Chain***

Comprehensive policies are known to be reliable and protective of industry players. Table 26 contains 15 items which help determine whether the range of policies offered in the cashew value chain is comprehensive.

**Table 26: Comprehensiveness of the Range of Policies Offered in the Cashew Value Chain**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are there policies regarding what lands can be used for cashew plantations?	1 0.5	(185) 99.5	0.117	0.733	1		✓
Are there policies that determine what type of cashew planting material to use?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies that show where farmers should purchase their planting materials from?	(0) 0	(186) 100	No statistics computed		0		✓

**Tale 26 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are there policies that ensure farmers contact Agricultural Extension Agents for training before they start their cashew plantations?	(1) 0.5	(185) 99.5	0.117	0.733	1		✓
Are there policies that direct farmers on which soils to plant cashew?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies that ensure cashew farmers join cashew unions, societies or association?	(1) 0.5	(185) 99.5	0.71	0.733	1		✓
Are there policies that prescribe who qualifies to work as an input dealer in the cashew industry?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies which determine the minimum quality of agro-chemicals allowable on cashew plantations?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies that compel input dealers to educate farmers from time to time?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies on cashew that protect cashew farmers from exploitation by input dealers?	(0) 0	(185) 100	No statistics computed		0		✓

**Table 26 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are there policies that ensure farmers contact Agricultural Extension Agents for training before they start their cashew plantations?	(1) 0.5	(185) 99.5	0.117	0.733	1		✓
Are there policies that direct farmers on which soils to plant cashew?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies that ensure cashew farmers join cashew unions, societies or association?	(1) 0.5	(185) 99.5	0.71	0.733	1		✓
Are there policies that prescribe who qualifies to work as an input dealer in the cashew industry?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies which determine the minimum quality of agro-chemicals allowable on cashew plantations?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies that compel input dealers to educate farmers from time to time?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies on cashew that protect cashew farmers from exploitation by input dealers?	(0) 0	(185) 100	No statistics computed		0		✓

**Table 26 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are there policies on cashew that protect cashew farmers from exploitation by processors?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies on cashew that protect cashew farmers from exploitation by traders in RCN?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies that determine RCN quotas that farmers can sell out to export market traders to ensure local processors get enough to process year-round?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies which ensure the operationalisation of warehouse receipts system for cashew in the Brong-Ahafo Region?	(0) 0	(186) 100	No statistics computed		0		✓
Are there policies which ensure the operationalisation of guaranteed price system for cashew in the Brong-Ahafo Region?	(0) 0	(186) 100	No statistics computed		0		✓

Source: Field Data (2017)

From the results, it is clear that the respondent cashew farmers answered in the negative all the fifteen items raised in respect of the scale on the

comprehensiveness of the range of policies (Table 26). For twelve of the items, there were no statistics because not a single cashew farmer answered in the affirmative. For the three items which had statistics, only one farmer in each case responded in the positive with 185 farmers answering in the negative. The chi-square figures for the three items with statistics were not significant indicating that there were no differences in opinions between male and female cashew farmers on them. It can be generally concluded that the range of policies offered in the cashew value chain is not comprehensive. Ghana News Agency (GNA), (August 9, 2017), confirmed this from the Trade Ministry's Cashew Policy forum held in Accra in August 2017.

### **Strengthening strategies for the Cashew Value Chain**

The components of the existing strengthening strategies are awareness-raising; capacity building; research; information sharing; public policy dialogue; and partnership building. The following sections discuss the outcomes of these from the research results

#### ***Awareness-raising about the economic importance of cashew***

Table 27 has nine items the responses to which together help to find out whether awareness-raising about the economic importance of cashew is being pursued diligently in the Wenchi and Techiman municipalities.

**Table 27: Awareness-Raising about the Economic Importance of Cashew**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are there radio adverts on RCN in the Brong-Ahafo Region from time to time?	(62) 33.3	(124) 66.7	0.000	1.000	1		✓
Are there TV adverts on RCN in the Brong-Ahafo Region from time to time?	(20) 10.8	(166) 89.2	0.406	0.524	1		✓
Are there newspaper adverts on RCN in the Brong-Ahafo Region from time to time?	(7) 3.8	(179) 96.2	0.503	0.478	1		✓
Are there national programmes from time to time to forcefully increase people's wakefulness to the nutritional benefits of cashew?	(52) 28	(134) 72	0.000	1.000	1		✓
Are there national programmes to forcefully increase people's wakefulness to the tremendous capacity of cashew to help reduce poverty among the suffering masses?	(58) 31.2	(128) 68.8	0.000	1.000	1		✓
Are there national programmes to forcefully increase people's wakefulness to the numerous commercial products obtainable from cashew?	(54) 29	(132) 71	0.569	0.451	1		✓
Are there adverts in the Brong-Ahafo Region which direct potential farmers to where they	(8) 4.3	(178) 95.7	0.026	0.873	2		✓



**Table 27 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
can generally get information on cashew?	(8) 4.3	(178) 95.7	0.026	0.873	2	✓	
Are there adverts in the region which direct potential farmers to where they can purchase cashew clonal seedlings of known pedigree?	(3) 1.6	(183) 98.4	0.403	0.526	2	✓	
Are there adverts in the Brong-Ahafo that show farmers where to sell their RCN for competitive prices?	(0) 0	(186) 100	No statistics computed		1	✓	

Source: Field Data (2017)

From the research results, 124 respondents constituting 66.7% indicated there are no radio adverts in the region regarding RCN (Table 27). One hundred and sixty-six of them also indicated that there are no TV adverts on RCN in the region from time to time. From the respondents 179 constituting 96.2% claim there are no newspaper adverts on RCN in the region from time to time. One hundred and thirty-four of the respondent farmers (72%) claim there are no national programmes from time to time to forcefully increase people's wakefulness to the nutritional benefits of cashew. There are generally no adverts to show the capacity of cashew to help reduce poverty among suffering people or to display the numerous commercial products obtainable from cashew. According to all the respondent farmers, there are no adverts in the Brong-Ahafo Region that

show farmers where to sell their RCN at competitive prices. The items with statistics did not show any corresponding significant chi-square figures indicating that male and female cashew farmers were not divided in their opinions about any of them. It is evident from Table 27 that awareness-raising about the economic importance of cashew is not being pursued diligently in the Brong-Ahafo Region.

### *Capacity Building*

Table 28 presents 11 items the responses to which help to answer the scale whether capacity building is being pursued diligently. From the research results, five of the items were answered in the affirmative while another set of five were not (Table 28). There was one tie-split on the item “Have you received training from extension in agro-chemical selection?” with 93 farmers constituting 50% on each side.

**Table 28: Capacity Building**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Have you been trained by extension in grafting techniques?	(84) 45.2	(102) 54.8	4.684*	0.030	2	✓	
Have you been taught by extension what the recommended planting distance for cashew is?	(115) 61.8	(71) 38.2	2.015	0.156	2	✓	
Have you received training from extension in how to correctly transplant cashew seedlings on the field?	(108) 58.1	(78) 41.9	1.641	0.200	2	✓	

**Table 28 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Have you received training from extension in the preparation of compost?	(72) 38.7	(114) 61.3	1.529	0.216	2		✓
Have you received training from extension in agro-chemical selection?	(93) 50	(93) 50	1.536	0.215	2		
Have you received training from extension in how to apply agro-chemicals to your cashew?	(98) 52.7	(88) 47.3	2.121	0.145	2	✓	
Have you received training from extension in how to prune your cashew trees if need be?	(118) 63.4	(68) 36.6	4.329*	0.037	2	✓	
Have you been trained in cashew canopy substitution techniques?	(78) 41.9	(108) 58.1	1.514	0.218	2		✓
Have you been trained by extension in cashew market search techniques?	(8) 4.3	(178) 95.7	0.026	0.873	2	✓	
Have you been trained by extension in harvesting techniques?	(113) 61	(72) 38.9	4.935*	0.026	2		✓
Have you received any training from extension in cashew kilo-price negotiation skills?	(4) 2.2	(181) 97.8	0.022	0.883	1		

Source: Field Data (2017)

\* indicates significance at 0.05 level

From the research results a number of farmers totalling 102 and constituting 54.8% indicated they have not been trained in grafting techniques (Table 28). It is the responsibility of extension to ensure that farmers obtain this important skill. Research produced 500,000 seedlings for distribution among farmers in 2017. Extension could organise visits to take cashew farmers to the Wenchi Agricultural Research Station to learn these skills or they can learn the skills and teach them to farmers. From Table 28, 114 (61.3%) farmers also indicated that they have not been trained by extension in the preparation of compost. If farmers are taught this skill, it can reduce their dependence on chemical fertilisers and tie in straight with the concept of competitive advantage. A lot of debris from dried cashew leaves abound on cashew plantations and these could easily be transformed into enhanced compost rather than raising the level of risk of their serving as materials for bush fires. Two other critical areas have to do with market search techniques and kilo-price negotiating skills. From Table 28, 178 respondents constituting 95.7% claim not to have been trained by extension in cashew market search techniques. Another sizeable number, 181 (97.8%) also indicated they have not received any training from extension in kilo-price negotiation skills.

Three items under the scale “Is capacity building being pursued diligently” had  $p < 0.05$  indicating that there are differences between the sexes in respect of their opinions. The three items are “Have you been trained by extension in grafting techniques?” and significant chi-square value of 4.684, “Have you received training from extension in how to prune your trees if need be?” and

significant chi-square value of 4.329 and “Have you been trained by extension in harvesting techniques?” and significant chi-square value of 4.935. In all, five critical items have not been honoured and this helps to conclude that capacity building of cashew farmers is not being pursued diligently in the Wenchi and Techiman municipalities.

***The Research Sub-System***

Table 29 features 20 items that together help to find out whether the research sub-system has helped to improve cashew production.

**Table 29: The Research Sub-System**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Did the research sub-system conduct any soil tests on your land before you started transplanting your cashew seedlings?	(0) 0	(185) 100	No statistics computed		0		✓
Did the research sub-system recommend any planting materials for you to use in establishing your plantation?	(0) 0	(185) 100	No statistics computed		0		✓
Has the research sub-system taught you how to prepare enhanced compost in two weeks?	(0) 0	(185) 100	No statistics computed		0		✓
Has the research sub-system recommended to you any preferred agro-chemicals for cashew plantations?	(0) 0	(186) 100	No statistics computed		0		✓

**Table 29 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Has the research sub-system taught you how to prepare enhanced compost in two weeks?	(0) 0	(185) 100	No statistics computed		0		✓
Has the research sub-system recommended to you any preferred agro-chemicals for cashew plantations?	(0) 0	(186) 100	No statistics computed		0		✓
Has the research sub-system shown you how to cultivate and produce organic cashew?	(0) 0	(186) 100	No statistics computed		0		✓
Has the research sub-system recommended any harvesting method to you?	(0) 0	(186) 100	No statistics computed		0		✓
Has the research sub-system helped you to conduct a market survey before?	(0) 0	(186) 100	No statistics computed				✓
Has the research sub-system provided any solutions to help cashew farmers cope with the effects of harsh weather (particularly rainstorms that cause many flowers to abort and sometimes inadequate rainfall)?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers organise farm trials on cashew farmers' fields?	(0) 0	(186) 100	No statistics computed		0		✓

Source: Field Data (2017)

**Table 29 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do researchers answer your questions when they come for farm trials?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers identify cashew problems by themselves when they come for farm trials?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers advice on problems they observe on cashew farmers' fields?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers organise field days on which they answer cashew farmers' questions?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers demonstrate pruning on some cashew farmers' fields?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers demonstrate thinning out on some cashew farmers' fields?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers demonstrate spraying of insecticide on some cashew farmers' fields?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers select fresh land on some cashew farmers' plantation to demonstrate lining and pegging in order to prepare planting holes?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers teach farmers how to transplant and take care of their clonal seedlings when they go to buy them from research stations?	(0) 0	(186) 100	No statistics computed		0		✓
Do researchers go on radio to discuss and advise on cashew cultivation?	8 4.3	(178) 95.7	0.026	0.873	1		✓
During on farm trials, are other cashew farmers invited to observe what goes on?	(0) 0	(186) 100	No statistics computed		0		

Source: Field Data (2017)

Of the twenty items under the scale presented in Table 29, none was answered in the affirmative by any farmer. For all twenty items, respondent farmers numbering either 185 or 186 unanimously responded in the negative. The message is clear that there is no working relationship between researchers and cashew farmers. According to the respondent farmers, the research sub-system has not helped to improve cashew production.

***Information Sharing along the Cashew Value Chain***

Table 30 from 11 items displays responses that together help to get an insight into the information sharing situation along the cashew value chain.

**Table 30: Information Sharing along the Cashew Value Chain**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Apart from extension, have you ever received information on how to take care of your cashew plants/RCN from other actors on the cashew value chain before?	(57) 30.6	(129) 69.4	2.609	0.106	1		✓
Apart from extension, have you received information on cashew sector policies from other actors of the cashew value chain before?	(6) 3.2	(180) 96.8	0.000	1.000	1		✓
Apart from extension, have you had access to advisory/technical support from other actors on the chain on how to manage your cashew plantation before?	(48) 25.9	(137) 74.1	2.656	0.103	1		✓
Apart from extension, have you ever received information from any actor on the cashew value chain that helped increase your output /sales in the cashew industry?	(45) 24.2	(141) 75.8	0.072	0.788	1		✓



**Table 30 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Apart from the cashew union, do you belong to any cashew multi-stakeholder platform?	(4) 2.2	(182) 97.8	0.000	1.000	1		✓
Excluding extension, have you ever received an SMS message on your mobile phone informing you about where to get the best cashew market prices in Ghana before?	(0) 0	(186) 100	No statistics computed		1		✓
Excluding extension, have you ever been told by another actor on the chain about where to get the best cashew market in Ghana before?	(24) 12.9	(162) 87.1	0.567	0.452	1		✓
Excluding extension, have you ever received an SMS message on your mobile phone from other actors informing you about the best cashew markets outside Ghana?	(3) 1.6	(182) 98.4	0.000	1.000	1		✓
Excluding extension, have you ever heard from other actors about the best cashew markets outside Ghana before?	(22) 11.8	(164) 88.2	3.594	0.058	1		✓
Does the cashew union to which you belong give you information on cashew?	(46) 24.7	(140) 75.3	2.147	0.143	1		✓
Does the cashew association to which you belong give you information on cashew?	(44) 23.7	(142) 76.3	2.577	0.108	1		✓
							✓

Source: Field Data (2017)

Of the eleven items under the scale in Table 30, no farmers among the respondents answered any in the affirmative indicating overwhelmingly that apart from extension disseminating information, there is no information sharing along the cashew value chain. None of the chi-square values presented was significant indicating that male and females cashew farmers were undivided in their opinions regarding those items.

The International Bank for Reconstruction and Development and the World Bank (2011), have written extensively about the need to use ICT in agriculture. This use of ICT in accessing agricultural information has been recorded in Kenya though, but it is rather low and most of the users were males (Munyua, 2011).

Majority of cashew farmers like other farmers are not up to date with information regarding high value markets (Taylor, Zezza and Gurkan, 2009). They are often in a hurry to sell off their produce to local buyers at prices that are not competitive. In some parts of Indonesia for instance, a GAP analysis revealed that some farmers even sell their cashew before harvesting at low prices because they need fast cash (Muktasam, 2012). They do not seem to worry too much about this partly because they do not have sufficient market information that could whet their appetite and help defer their quest for instant gratification of their financial desires.

Große-Rüschkamp & Seelige (2010) firmly established this attitude in some cashew farmers when they posited that favourable conditions for cashew marketing can also be increased by providing better market information and that

for the farmers in particular, such an information system is of vital interest. Farmers, according to Große-Rüschkamp & Seelige (2010), often sell to the closest buyers and traders without knowing about regional cashew prices. They then concluded that farmers' conditions (e.g. no storage and/or transport facilities, hunger and therefore urgent need for cash) very often prevent them from selling elsewhere, but better information about prices would in some cases probably lead to higher revenues for them. In conclusion, in the view of respondent farmers shown on Table 30, apart from extension disseminating information, there is no information sharing along the cashew value chain.

***Public Policy Dialogue in the Cashew Value Chain***

Five items on Table 31 aided cashew farmers to give insight into what they thought of policy dialogue in the cashew value chain.

**Table 31: Public Policy Dialogue in the Cashew Value Chain**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do you see <i>direction setting</i> as a characteristic or hall mark in the cashew industry?	(160) 86.0	(26) 14.0	0.096	0.757	1	✓	
Do you see <i>problem solving</i> as a characteristic or hall mark in the cashew industry?	(159) 85.5	(27) 14.5	0.000	1.000	1	✓	
Do you see <i>knowledge sharing</i> as a characteristic or hall mark in the cashew industry?	(164) 88.2	(22) 11.8	0.001	0.981	1	✓	
Do you see <i>discussion of issues</i> as a characteristic or hall mark in the cashew in	(162) 87.1	(24) 12.9	0.029	0.864	1	✓	

**Table 31 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
industry?							
Do you see <i>debate of issues</i> as a characteristic or hall mark in the cashew industry?	(162) 87.1	(24) 12.9	0.029	0.864	1	✓	

Source: Field Data (2017)

From the research results, according to the respondent farmers, there is all together public policy dialogue in the cashew value chain in the Wenchi and Techiman municipalities (Table 31). One hundred and sixty farmers (86%) see direction setting as a characteristic or hall mark in the cashew industry. This decision is of grave concern since the institutional body that is supposed to be determining the direction is not yet in place. Another 164 (88.2%) also see knowledge sharing as a hall mark in the cashew industry. Two sets of respondent farmers numbering 162 each and constituting 87.1% each claim they see both discussion and debate of issues as hall marks of the cashew industry. None of the chi-square values in the table is significant because for each,  $p > 0.05$ . In conclusion, according to respondent cashew farmers, there is public policy dialogue in the cashew value chain in the Wenchi and Techiman municipalities.

***Partnership Building in the Cashew Value Chain***

Table 32 displays 10 items, responses to which together help determine from cashew farmers’ perspective whether there is partnership building along the cashew value chain or not.

**Table 32: Partnership Building in the Cashew Value Chain**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are there joint ventures across actor categories on the cashew value chain?	(13) 7.0	(173) 93.0	1.337	0.247	1		✓
Are there affiliations (links) among the various actors on the cashew value chain?	(15) 8.1	(171) 91.9	2.156	0.142	1		✓
Is there cooperation (mutual aid) among actors along the cashew value chain?	(16) 8.6	(170) 91.4	0.000	1.000	1		✓
Is there collaboration (team work) among actors on the cashew value chain?	(23) 12.4	(163) 87.6	0.019	0.891	1		✓
Are there alliances (coalitions or unions) among actors along the cashew value chain?	(17) 9.1	(169) 90.9	0.019	0.890	1		✓
Is there a formal relationship between farmer groups and input dealer groups in the Wenchi and Techiman Municipalities?	(41) 22.0	(145) 78.0	0.269	0.604	1		✓
Is there a formal relationship between farmer groups and cashew processors in the Wenchi and Techiman Municipalities?	(0) 0	(185) 100	No statistic computed		0		✓
Is there a formal relationship between farmer groups and produce buying companies in the Wenchi and Techiman Municipalities?	(34) 18.3	(152) 81.7	0.166	0.684	1		✓
Is there a formal relationship between farmer groups and financial institutions in the Wenchi and Techiman Municipalities?	(7) 3.6	(179) 96.2	2.320	0.128	1		✓
Are there platforms that bring cashew farmers, extension, research, input dealers, financial institutions and traders together for discussions in the Wenchi and Techiman Municipalities?	(2) 1.1	(184) 98.9	0.000	1.000	1		✓

Source: Field Data, 2017

In respect of the scale of Table 32 with its 10 items, the majority of the respondent farmers answered in the negative for each of those items. According to them, there are no joint ventures across actor categories on the cashew value chain. They also indicated there are no affiliations or links among the various actors, there is no cooperation or mutual aid among actors and no collaboration or team work among actors. According to the farmers, there are no formal relationships among them and other actors on the chain. In the view of the respondent farmers, there are no platforms that bring cashew farmers, extension, research, input dealers, financial institutions and traders together for discussions in the Wenchi-Techiman municipalities. It is, however, known for a fact that such a platform for the cashew value chain ever existed in Wenchi. It was facilitated by IFDC and MUCG. This information runs counter to the position taken by farmers. The chi-square values in the Table are not significant indicating that the male and female cashew farmers are not divided in their opinions on the items. From the research results, there is no partnership building along the cashew value chain in the Wenchi and Techiman municipalities.

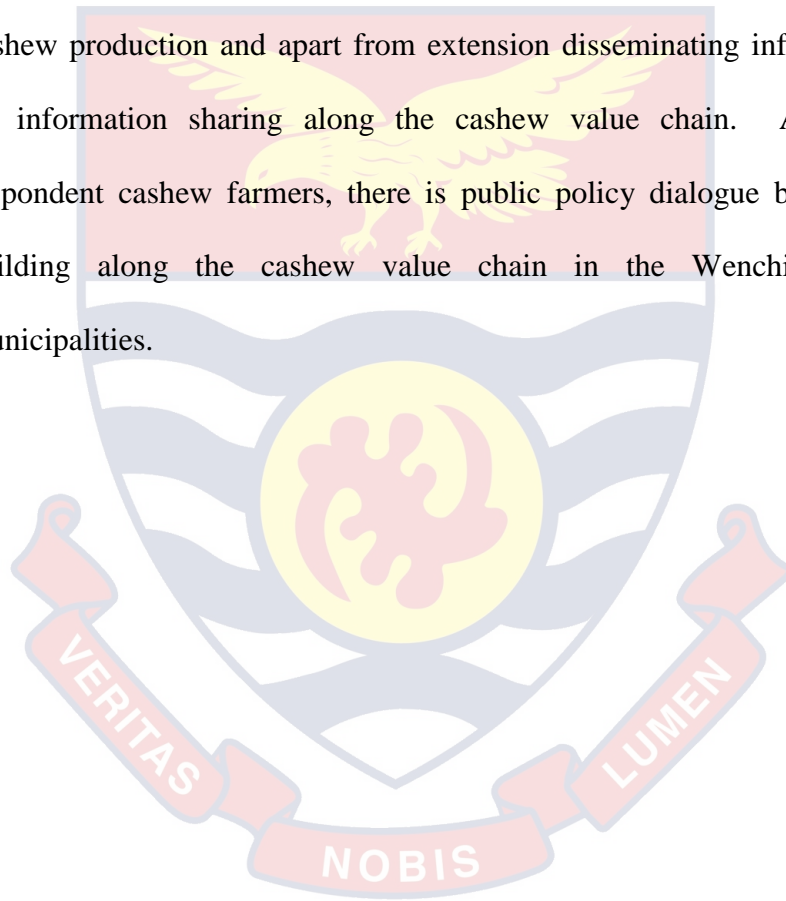
### **Summary**

Cashew knowledge and skills are generally available among cashew farmers.

In the main, financial support is not available to cashew farmers in the Wenchi and Techiman municipalities. Raw materials for cultivating cashew are, however, available. Though the local market is available, the critical things which will cause it to be well established and competitive are unavailable. International markets are not accessible to cashew farmers in the Wenchi and Techiman

municipalities. Physical infrastructure necessary for the development of the cashew value chain is partially developed while the range of policies offered in the cashew value chain is not comprehensive.

Awareness-raising about the economic importance of cashew as well as Capacity building of cashew farmers are not being pursued diligently. According to the respondent farmers, the research sub-system has not helped to improve cashew production and apart from extension disseminating information, there is no information sharing along the cashew value chain. According to the respondent cashew farmers, there is public policy dialogue but no partnership building along the cashew value chain in the Wenchi and Techiman municipalities.



**CHAPTER SEVEN**  
**CASHEW VALUE CHAIN DEVELOPMENT PROCESSES, LEVEL OF**  
**CONTRIBUTION OF CASHEW PRODUCTION TO FARMERS’**  
**LIVELIHOODS, AND OPERATIONAL FRAMEWORK**

**Introduction**

This chapter presents the current state of affairs of the value chain development processes and queries cashew farmers to find out whether they have played their respective roles in each of them. It also discusses briefly the major sources of income apart from cashew for cashew farmers and looks at the percentage contribution of cashew to the livelihoods of cashew farmers. Finally, it presents the operational framework for improving the cashew value chain and livelihoods of cashew farmers.

**Existing Conditions of the Value Chain Development Processes**

There are seven cashew value chain development processes in the Wenchi and Techiman municipalities. These are formation and effective use of cashew clusters; skills training for capacity building; sustainability of cashew value chain financing (VCF); input/output standards; technological operations; cashew farmers’ participation in inclusive markets; and a functionally dynamic policy environment. The research results are taken one after the other to give insight into these processes.



### Formation and Effective use of Clusters

Table 33 has five items the answers to which together help admit or refute the presence of challenges in the formation and effective use of clusters.

**Table 33: Formation and Effective use of Clusters**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Are you generally willing to sacrifice your time for others in your union?	(155) 83.3	(31) 16.7	2.765	0.096	1	✓	
Do your cashew leaders in the cashew unions have the requisite knowledge in how to keep the unions running?	(139) 74.7	(47) 25.3	0.318	0.573	1	✓	
Do you fully appreciate and understand the principle of the economies of scale and how it can benefit your cashew union?	(158) 84.9	(28) 15.1	0.182	0.670	1	✓	
Illiteracy does not pose any hindrance to the formation and sustenance of cashew unions	(67) 36.0	(119) 64.0	1.062	0.303	1		✓
There is good leadership in my cashew union	(140) 75.3	(46) 24.7	1.099	0.294	1		✓

Source: Field Data (2017)

Table 33 presents a scale with five items to find out whether there are no challenges in the formation and effective use of clusters. From the research results, in four of the items, farmers claim there are no challenges. One hundred

and nineteen of them constituting 64% believe that illiteracy poses some hindrance to the formation and sustenance of cashew unions (Table 33). The chi-square values in the Table 33 are not significant, indicating that there are no differences in opinions between male and female cashew farmers. On the whole, however, the respondent farmers believe there are no challenges in the formation and effective use of clusters.

**Do Cashew Farmers play their roles in Formation and Effective use of Clusters?**

Table 34 puts three items forward to help determine whether cashew farmers play their roles or not under formation and effective use of clusters.

**Table 34: Do Cashew Farmers play their Role in the Formation and Effective use of Clusters?**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do you belong to a cashew commodity cluster?	(113) 60.8	(73) 39.2	0.499	0.480	1	✓	
Are you regular at meetings?	(108) 58.1	(78) 41.9	0.000	1.000	1	✓	
Do you participate actively in meetings of your cashew commodity cluster?	(103) 55.4	(83) 44.6	0.000	1.000	1	✓	

Source: Field Data (2017)

From the results, the three items posted were answered positively by farmers. According to 113 of them constituting 60.8%, they belong to a cashew commodity cluster (Table 34). One hundred and eight (58.1%) of them also

indicated they are regular at meetings. Finally, 103 of them constituting 55.4% claimed they participate actively in meetings of their cashew commodity cluster. This generally means that cashew farmers play their roles under formation and effective use of clusters. None of the chi-square figures is significant indicating that the cashew farmers were not divided in their opinions along sex lines.

### Skills Training for Capacity Building among Cashew Farmers

Table 35 shows the state of affairs on the field with reference to whether there are challenges with skill training or not.

**Table 35: Skills Training for Capacity Building**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
You have been trained to be able to locate excellent cashew market centres.	(13) 7.0	(173) 93.0	0.000	1.000	1		✓
You have been trained to be well-informed about the standards the RCN market wants	(26) 14.0	(160) 86.0	3.702	0.054	1		✓
You have been trained and therefore can make informed decisions for yourself in the cashew business.	(80) 43.0	(106) 57.0	0.660	0.416	1		✓
You have attended a capacity training workshop/seminar before	(76) 41.1	(109) 58.9	10.717*	0.001	1		✓
The period for the training session was in your estimation adequate	(52) 28.1	(133) 71.9	2.109	0.146	1		✓

Source: Field Data (2017)

\* indicates significance at 0.05 level

From the research results, majority of farmers responded negatively to each of the items (Table 35). One hundred and seventy-three (93%) indicated they

have not been trained to be able to locate excellent cashew market centres. According to 160 (86%) of them, they have not been trained to be well-informed about the standards the RCN market wants. Table 35 shows only one significant chi-square value of 10. 717 and that is for the item “You have attended a capacity training workshop before”. This implies that the male and female cashew farmers were undivided in their opinions for all other items on Table 35. Evidence from Table 35 shows that there are challenges with Skills Training for Capacity Building among cashew farmers.

### Do Cashew Farmers play their roles in Skills Training for Capacity

#### Building?

On Table 36, three items and their respective responses by cashew farmers in the Wenchi and Techiman municipalities help to find out whether cashew farmers play their roles under skills training for capacity building or not.

**Table 36: Do Cashew Farmers play their roles in Skills Training for Capacity Building?**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do you honour invitations to technical training workshops on cashew?	(85) 45.7	(101) 54.3	12.330*	0.000	1	✓	
When invited to technical training workshops on cashew, do you participate fully in the programmes?	(81) 43.5	(105) 55.6	11.676*	0.001	1	✓	
When you attend such workshops do you ensure that effective learning takes place by evidence of transformational change in you?	(71) 38.2	(115) 61.8	11.316*	0.001	1	✓	

Source: Field Data (2017)

\* indicates significance at 0.05 level

The three chi-square values on Table 36 are all significant indicating that for all the items, male and female cashew farmers are divided in their opinions. From the results, 101 respondent farmers constituting 54.3% claimed they did not honour invitations to technical training workshops on cashew (Table 36). Those who attended such workshops did not participate fully in them and they did not also ensure that effective learning took place by evidence of transformational changes in them. Farmers therefore do not play their roles under Skills Training for Capacity Building.

### Sustainability of Cashew Value Chain Financing (VCF)

Table 37 posts items that try to find out whether there is sustainability of value chain financing along the cashew value chain. Responses from seven items assist to form a common opinion about the situation on the ground.

**Table 37: Sustainability of cashew Value Chain Financing (VCF)**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Have you applied for a bank loan for your cashew before?	(19) 10.3	(166) 89.7	4.117*	0.042	1	✓	
Did you receive that bank loan?	(19) 100	No statistics computed				✓	
Was the loan approved in good time?	(17) 89.5	(2) 10.5	0.497	0.481	1	✓	
Bank officials did not ask for any kickbacks	(8) 42.1	(11) 57.9	0.268	0.604	1		✓
Did you finish paying off the loan?	(18) 94.7	(1) 5.3	0.000	1.000	1	✓	
You do not quite well seem to understand how bank systems work.	(92) 49.5	(94) 50.5	0.042	0.838	1		✓

**Table 37 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Bank officials do not seem to understand how farmers' systems operate	(113) 60.8	(73) 39.2	2.295	0.130	1	✓	

Source: Field Data (2017)

\* indicates significance at 0.05 level

Only one of the chi-square values on Table 37 is significant indicating there is a difference between male and female opinions in respect of the item “have you applied for a bank loan for your cashew before?”. For the rest of the items, the cashew farmers were not divided in their opinions along sex lines. From the research results, 166 respondent farmers (89.7%) have not applied for bank loans for their cashew businesses before (Table 37). Only 19 farmers constituting 10.3% claimed to have done so before. Of those who ever applied for loans, all claimed to have received their loans and also 17 constituting 89.5% said their loans were approved in good time. Eighteen farmers constituting 94.7% of those who ever received loans finished paying off their loans. Ninety-four farmers constituting 49.5% indicated they do not quite well seem to understand how bank systems work. According to 113 farmers (60.8%), bank officials do not seem to understand how farmers' systems operate. Confirming this, Pelrine and Besigye (2007), stated that provision and recovery of credit is not a simple task. According to them, the lender will always face challenges of choosing the right borrower, financing the right business and recovering what has been loaned at a profit. They further stated that agriculture is often the most difficult sector to lend to because the lender's understanding of the business is often limited and information for

making lending decisions is often difficult to come by. According to the general impression of respondent farmers, there are no challenges with sustainability of cashew Value chain financing (VCF) except in the case where they think bank officials do not understand their working systems as farmers.

### Do Cashew Farmers play their roles in Sustainability of Cashew Value Chain Financing (VCF)?

Table 38 displays the details of responses to four items plus their statistics in respect of cashew value chain financing with the view to help form an opinion about cashew farmers in group relationship.

**Table 38: Do Cashew Farmers play their roles in Sustainability of cashew value chain financing (VCF)?**

Item	Total			Chi-Square: Pearson's	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	N/A				Yes	No
	Have you taken a group loan before?	(31) 16.7	(155) 83.3					2.117
If yes, did you guarantee for each other as a group?	(28) 15.1	(3) 1.6	(155) 83.3	11.005*	0.004	2	✓	
Did you pay back the loan granted on schedule?	(26) 14.0	(7) 3.8	(153) 82.3	4.729	0.094	2	✓	
Did you encourage other cashew farmers to pay back their loans?	(26) 14	(7) 3.8	(153) 82.3	3.085	0.214	2	✓	

Source: Field Data (2017)

\* indicates significance at 0.05 level

Of the four chi-square values shown on Table 38, only the one for the item “If yes, did you guarantee for each other as a group” was significant at 11.005 indicating male and female cashew farmers were divided in their opinion on the item. From the research results, only 31 farmers constituting 16.7% claimed to have taken group loans before (Table 38). Of the 31 farmers, 28 indicated they guaranteed for each other. Twenty-six of the farmers indicated they paid off their loans on schedule. Another 26 also indicated that they encouraged their colleagues to pay back their loans. Though the majority of the respondent farmers have not taken group loans before, those who indicated they have done so before by their responses to the items showed business traits that can help sustain cashew value chain financing.

### Input and Output Standards among Cashew Farmers

39 displays whether there are critical challenges with input and output standards among Table cashew farmers.

**Table 39: Input and Output Standards among Cashew Farmers**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Fake agro-chemicals enter the market without restraint	(110) 59.1	(76) 40.9	0.153	0.695	1	✓	
There is a policy that prescribes to cashew farmers the minimum acceptable cashew seedling pedigree for cultivation on cashew plantations	(1) 0.5	(185) 99.5	0.000	1.000	1		✓
Generally, AEAs’ knowledge about cashew is adequate	(112) 60.2	(74) 39.8	0.000	1.000	1	✓	
Researchers make their usefulness felt by cashew farmers	(1) 0.5	(185) 99.5	0.117	0.733	1		✓



**Table 39 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
There is a policy that prescribes the minimum acceptable output quality of RCN	(0) 0	(186) 100	No statistics computed		0		✓
There is grading of RCN on the local market	(26) 14.0	(160) 86.0	0.019	0.891	1		✓
Recommended packaging of RCN is enforced	(9) 4.8	(177) 95.2	0.157	0.692	1		✓
Recommended RCN storage requirements are enforced	(12) 6.5	(174) 93.5	0.973	0.324	1		✓
Your customers are always satisfied with your services	(173) 93.0	(13) 7.0	0.444	0.505	1	✓	

Source: Field Data (2017)

There were no significant chi-square values on Table 39 indicating that male and female cashew farmers were not divided in their opinions on the various items. According to 110 respondent farmers (59.1%), fake agro-chemicals enter the market without restraint (Table 39). This was also confirmed by Boateng (2017). One hundred and eighty-five of them constituting 99.5% claim there is no policy that prescribes to them the minimum acceptable cashew seedling pedigree for cultivation on cashew plantations. In the view of 160 of the respondent farmers constituting 86.0%, there is no grading of RCN on the local market. Adu (2017) supported this statement when he expressed concern that there are no approved standards in cashew trading. According to 174 of the farmers (93.5%), recommended packaging of RCN is not enforced and 174 (93.5%) of them also stated that recommended RCN storage requirements are not enforced. The

general impression among farmers is that there are critical challenges with both input and output standards among them.

**Do Cashew Farmers play their roles in Input /Output Standards?**

Table 40 from the responses of a few items, gives an indication of whether cashew farmers play their roles under input/output standards.

**Table 40: Do Cashew Farmers play their roles in Input/output Standards?**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
	Do you know the input/output standards in cashew prescribed by law?	(1) 0.5				(185) 99.5	0.000
Do you observe the standards prescribed by law?	(0) 0	(185) 100	No statistics computed		0	✓	
Have you reported any breaches in input supplies to the authorities before?	(0) 0	(186) 100	No statistics computed		0	✓	

Source: Field Data (2017)

Table 40 exhibits three items, responses to which help find out whether farmers play their roles under input/output standards. According to the research results, for each of the items, farmers overwhelmingly answered in the negative thereby not allowing the working of any statistics since the responses to the items were constant. Clearly, farmers do not play their roles under input/output standards.

### Technological Operations of Cashew Farmers

Table 41 presents analysed field data on whether or not there are critical challenges with technological operations among cashew farmers in the Wenchi and Techiman municipalities.

**Table 41: Technological Operations of Cashew Farmers**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Information on recommended soil tests was made available to me before the onset of my cashew plantation	(3) 1.6	(183) 98.4	0.000	1.000	1	✓	
Information on approved soil types for cashew cultivation was made available to me before the onset of my cashew plantation.	(5) 2.7	(181) 97.3	0.034	0.853	1	✓	
All my cashew seedlings were purchased from approved nurseries	(27) 14.5	(159) 85.5	0.081	0.777	1	✓	
I have observed the recommended planting distance on my cashew plantation	(136) 73.5	(49) 26.5	0.591	0.442	1	✓	
I know how to prepare compost	(113) 61.4	(71) 38.6	0.489	0.485	1	✓	
I have applied compost to my cashew trees before	(32) 17.3	(153) 82.7	1.942	0.163	1		✓
I harvest my RCN from fallen cashew fruits	(182) 97.8	(4) 2.2	0.000	1.000	1	✓	

**Table 41 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
	I dry my RCN on tarpaulin	(124) 66.7				(62) 33.3	4.564*
I sell my RCN in bulk	(147) 79.0	(39) 21.0	4.054*	0.044	1	✓	

Source: Field Data (2017) \* indicates significance at 0.05 level

The scale on Table 41 has nine items and from the research results presented, no information on recommended soil tests was made available to 183 respondent farmers constituting 98% before the onset of their cashew plantations. From 181 farmers (97.3%) also information on approved soil types for cashew cultivation was not made available to them before the onset of their cashew plantations. Only 27 (14.5%) farmers purchased their seedlings from approved nurseries. Though 113 farmers claim they know how to prepare compost, only 32 constituting 17.3% have applied compost to their cashew trees before. One hundred and forty-seven of them (79%) also claim they sell their RCN in bulk. The item “I dry my RCN on tarpaulin” had 124 farmers answering yes with a significant chi-square figure of 4.564 ( $p < 0.05$ ). This means there is a significant difference between male and female positions on the issue. Similarly, the item “I sell my RCN in bulk” had 147 farmers (79%) saying “yes” and 39 constituting 21% saying “no” with a chi-square figure of 4.054 ( $p < 0.05$ ). These two situations indicate that the sex positions on the items are dissimilar and significant.

Technological operations are key activities in the development of the cashew value chain and according to farmers there are critical challenges with them.

**Do Cashew Farmers play their roles in Technological Operations?**

Table 42 makes manifest critical items and their corresponding responses to help ascertain whether cashew farmers in the Wenchi and Techiman Municipalities play their roles under Technological operations.

**Table 42: Do Cashew Farmers play their roles in Technological Operations?**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#)& %				Yes	No
Did you observe laid down rules and regulations of all policies in respect of site selection?	(0) 0	(186) 100	No statistics computed		0		✓
Did you observe laid down rules and regulations of all policies in respect of soil suitability?	(0) 0	(186) 100	No statistics computed		0		✓
Did you observe laid down rules and regulations of all policies in respect of planting material?	(1) 0.5	(185) 99.5	0.000	1.000	1		✓
Do you observe all cultural practices?	(134) 72.0	(52) 28.0	1.155	0.283	1	✓	

Source: Field Data (2017)

The scale for Table 42 is “Do cashew farmers play their roles under technological operation?” From the results, one hundred and eighty-six farmers constituting 100% claim they did not observe laid down rules and regulations of all policies in respect of site selection (Table 42). The same number also indicated they did not observe laid down rules and regulations of all policies in respect of soil suitability. One hundred and eighty-five of them constituting 99.5% also indicated they did not observe laid down rules and regulations of all policies in

respect of planting material. One hundred and thirty-four of them, however, claim they observe all cultural practices. On the contrary, according to Huis and Meerman (1997) cashew farmers have a poor record with regards to keeping good cultural practices because apart from their labour, they often do not invest in observing any good cultural practices and in view of this, their yields are generally low. Große-Rüschkamp and Seelige (2010) writing in support of this issue, stated that most smallholders do not consider their cashew trees as crops to be cultivated, but instead just harvest or collect nuts to sell and for this reason no specific cultivation techniques are applied, which results in low yields. The general impression from this research is that the respondent cashew farmers do not play their roles under technological operations.

### Cashew Farmers' Participation in Inclusive Markets

Table 43 carries data on whether or not there are critical issues with cashew farmers' participation in inclusive markets.

**Table 43: Cashew Farmers' Participation in Inclusive Markets**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
You are literate	(65) 34.9	(121) 65.1	11.676*	0.001	1	✓	
There are government storage facilities for cashew that are available to you	(2) 1.1	(183) 98.9	0.074	0.786	1	✓	
You have forcefully asked before to know how the kilo price of RCN is determined	(42) 22.6	(144) 77.4	1.906	0.167	1	✓	
You have forcefully requested for fair trade from the authorities in the cashew trade before	(40) 21.5	(146) 78.5	1.321	0.250	1	✓	

**Table 43 Cont'd**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
You have forcefully requested for an overhaul of the kilo price negotiating mechanism before	(48) 25.8	(138) 74.2	0.000	1.000	1		✓
You do everything possible to reduce your indirect costs (transaction costs) in cashew production	(155) 83.3	(31) 16.7	0.000	1.000	1	✓	
You understand contracts and how they work	(88) 47.6	(97) 52.4	8.650*	0.003	1		✓
You are willing to engage directly in foreign trade beyond the local level	(171) 91.9	(15) 8.1	6.323	0.012	1	✓	

Source: Field Data (2017)

\* indicates significance at 0.05 level

On Table 43, there are eight items that help us know whether cashew farmers engage in inclusive markets. From the results, one hundred and twenty-one respondent farmers constituting 65.1% are illiterate and therefore cannot read and write (Table 43). The chi-square for this is 11.676 and is significant because  $p < 0.05$ . The illiteracy level is rather too high and this is not good enough because one of the criteria for engagement in inclusive markets according to Kapfudzaruwa (2013) is literacy. Apantaku, Oloruntoba, and Fakoya (as cited in Wasihun, 2010) in an empirical study, found low educational status of farmers in a study conducted in Nigeria as a result of which extension was not much effective.

When the results of Table 5 are compared with the illiteracy rate of 65.1% on Table 43, one may be inclined to think immediately that there is an oxymoron

while indeed there is none at all. The explanation is that when farmers were asked to pick their last level attained on the educational ladder, they did so and we got 42 (23.2%) illiterate farmers and 111 (61.3%) Primary/JHs cashew farmers. Later and deeper into the interview schedule when the researcher sought to find out about cashew farmers' literacy status, the question certainly went beyond finding out whether a cashew farmer has attended school before to whether that cashew farmer could read and write at the time of the interview. It was this questioning technique that helped to bring out the real existing literacy status of cashew farmers needed in tandem with responses to other items of the scale to help determine the possibility of farmers' participation in inclusive markets.

According to 183 farmers (98.9%), there are no government storage facilities for cashew available to them. Generally, farmers have neither sought after fair trade nor have they forcefully requested for the overhaul of the kilo-price of cashew. They try to do everything possible to reduce their transaction costs (Kwanza, 2011) and are willing to engage directly in external trade beyond the local level.

The chi-square for the item "You understand contracts and how they work" is 8.650 and significant because  $p < 0.05$ . This means male and female cashew farmers were divided in opinion about the item. From Table 43, 88 cashew farmers (47.6%) claimed they understand contracts and how they work. This is surprising since from Table 8, only 15 farmers constituting 8.1% claimed they have signed contracts before. From Table 5 also, only 28 farmers have Secondary/Vocational (13.8%) or tertiary education (1.7%). The majority,



numbering 153 are either of Primary/JHS status (61.3%) or illiterate (23.2%). The high number of farmers who are knowledgeable about contracts is therefore surprising and may need to be further investigated. In general, there are critical negative issues with cashew farmers' participation in inclusive markets.

### Do Cashew Farmers play their roles in Participation in Inclusive Markets?

Participation in inclusive markets by cashew farmers is critical in their translation from below the poverty line to above it. Table 44 shows the status of cashew farmers in the Wenchi and Techiman Municipalities on this issue.

**Table 44: Do Cashew Farmers play their roles in Participation in Inclusive Markets?**

Item	Total			Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %	N/A				Yes	No
Has your cashew commodity cluster engaged the services of a professional Marketing Officer?	(1) 0.5	(166) 89.2	(19) 10.2	2.191	0.334	2		✓
If yes, have you put the Marketing Officer on stipend or retention?		(69) 37.3	(116) 62.7	3.110	0.078	1		✓
Do you pool your cashew harvests into one as a commodity cluster?		(133) 71.9	(52) 28.1	1.291	0.256	1		✓
Does your cashew union organise customised adult education programmes for cashew farmers?	(11) 5.9	(115) 62.2	(59) 31.9	4.257	0.119	2		✓
If cashew unions organise customised adult education programmes for cashew farmers, do cashew farmers actively participate in them?	(9) 4.9	(105) 56.8	(71) 38.4	3.156	0.206	2		✓

Source: Field Data (2017)

Table 44 exhibits five items and their statistics to help find out whether cashew farmers play their roles in getting to participate in inclusive markets. No cashew commodity cluster according to them has engaged the services of any professional Marketing Officers (Table 44). They do not also pull their harvests together for sale. No customised adult education programmes are organised for them by their cashew unions. Generally, the respondent cashew farmers have not put themselves in readiness to participate in inclusive markets.

### Creation of a Functionally Dynamic Policy Environment

Table 45 contains six critical items whose responses together help determine whether there are challenges with the creation of a functionally dynamic policy environment or not.

**Table 45: Creation of a Functionally Dynamic Policy Environment**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#)& %	No (#)& %				Yes	No
A wide range of policies is generated every now and then for the cashew industry	(3) 1.6	(183) 98.4	0.354	0.552	1		✓
A wide range of policies is enacted every now and then	(2) 1.1	(184) 98.9	1.527	0.217	1		✓
A wide range of policies is regulated every now and then	(2) 1.1	(184) 98.9	1.527	0.217	1		✓
A wide range of policies is reviewed every now and then	(2) 1.1	(184) 98.9	1.527	0.217	1		✓
There are economic sanctions to curb premeditated violations of the cashew policies	(2) 1.1	(184) 98.9	1.527	0.217	1		✓
There are economic incentives as for compliance with the cashew policies.	(2) 1.1	(184) 98.9	1.527	0.217	1		✓

Source: Field Data (2017)

None of the chi-square values on Table 45 is significant ( $p > 0.05$ ) indicating that male and female cashew farmers were not divided in their opinions in respect of the various items. From the research results, according to 183 respondent farmers constituting 98.4% (Table 45), no policies are generated every now and then. Similarly, 184 farmers (98.9%) claim no wide range of policies is enacted every now and then. This follows through with all the other four remaining items. No wide range of policies are regulated or reviewed every now and then. According to 184 of the farmers ((98.9%) there are no economic sanctions to curb premeditated violations of cashew policies and there are no economic incentives to reward compliance with cashew policies. Analysis of Table 45 shows that there are critical challenges with the creation of a functionally dynamic policy environment.

### **Do Cashew Farmers play their Roles in Policy Environment**

The policy environment entails some critical components including policy generation, enactment, application, regulation and review. Table 46 shows the roles of cashew farmers in each of these components per their responses to the items raised thereby.

All the five chi-square values on Table 46 are significant, indicating that opinions on the five items were divided along sex lines. From the research results, all five items were answered in the negative by farmers (Table 46) indicating clearly that, farmers do not play their roles under Policy Environment.

**Table 46: Do Cashew Farmers play their roles in Policy Environment?**

Item	Total		Chi-Square: Continuity Correction	Asymp. Sig. (2-sided)	df	Final decision on items according to cashew farmers	
	Yes (#) & %	No (#) & %				Yes	No
Do you stir the cashew industry by agitating government through extension to generate policies?	(26) 14.0	(160) 86.0	4.612*	0.032	1		✓
Do you stir the cashew industry by agitating government through extension to enact policies?	(26) 14.0	(160) 86.0	4.612*	0.032	1		✓
Do you stir the cashew industry by agitating government through extension to implement policies?	(23) 12.4	(163) 87.6	4.077*	0.043	2		✓
Do you stir the cashew industry by agitating government through extension to regulate policies?	(24) 12.9	(162) 87.1	4.577*	0.032	2		✓
Do you stir the cashew industry by agitating government through extension to review policies?	(23) 12.4	(163) 87.6	4.077*	0.043	2		✓

Source: Field Data (2017) \* indicates significance at 0.05 level

### **Level of Contribution of Cashew Production to Livelihoods of Cashew**

#### **Farmers**

In Ghana, most cashew farmers undertake cashew production as a supplementary business. Consequently, they limit themselves to the cultivation of only a few hectares. Cashew, however, has great potential to emancipate local farmers from chronic poverty. Tracking the potential of cashew in this research work via collecting and analysing empirical data, has therefore paved the way to validate the claims being made about cashew so the information can be confidently broadcast among all farmers in the Wenchi and Techiman municipalities. This information is what will permanently lift farmers from

poverty on to a new and sustainable life style that will enable them take very good care of themselves, their families and also have surpluses from which to invest and also give to those in need.

### **The Major Sources of Income apart from Cashew for Cashew Farmers**

The responses gathered from the interview schedule show that the major sources of income for the respondent farmers apart from cashew include aquaculture, tree crops cultivation (Cocoa, Oil Palm, Orange, Plantain and Banana), beekeeping, cassava, cocoyam, vegetables (local garden eggs, okro, hot pepper, and tomatoes), groundnuts, maize and mushroom. Other jobs from which some of them also get money include construction works, information centre management, tailoring, distilling of alcohol, teaching as well as preparation and sale of local foods.

### **Percentage Contribution of Cashew to Livelihoods of Cashew Farmers**

The research results indicate that the total amount of money realised through the work of the respondent farmers for both farm and nonfarm activities is GH¢ 2,239,900.00 in one year. The minimum percentage of individual farmers' cashew contribution to livelihood is 5.09% while the maximum is 88.24%. The mean percentage contribution of cashew to livelihoods of farmers is 54.65% with a standard deviation of 25.28. This implies that cashew on the average contributes approximately 55% to the livelihoods of the respondent cashew farmers. According to Foretell Business Solutions Private Limited (2014), the Cashew Development Project of Ghana claims that about 43% of total family income of farmers is generated through cashew farming.

## **An Operational Framework for Improving the Cashew Value Chain and Livelihoods of Cashew Farmers**

A framework is a set of critical interlinked-objectives that provides strategies for the smooth and effective functioning of a system which, in this case, is the cashew value chain.

### **The Operational Framework**

Among the results of the research work are a number of critical issues under various thematic areas. Six of these critical issues are:

1. The need to ensure that the development of the cashew value chain begins correctly and in earnest.
2. The choice as to whether government must build and operate warehouses or establish a warehouse receipt system for cashew has not been made yet. The two choices therefore need to be formally tabled before government for a decision to be made by a prospective umbrella organisation.
3. There is a bad relationship between cashew farmers and banking institutions in the Wenchi and Techiman municipalities (Table 13 and Table 21). Some banks even admitted openly that they are not cashew farmer friendly. This poor relationship needs to be fixed so that value chain financing (VCF) can be firmly introduced and sustained to help improve the cashew value chain and cashew farmers' livelihoods.
4. There is no guarantee of availability of quality inputs (Tables 39 and 41) and though farmers' observance of available cultural practices is commendable, there is the need for continuous improvement.

5. One hundred and two respondent cashew farmers constituting 54.8% indicated that they have neither been trained in grafting techniques nor in compost preparation (Table 28). They have also not been taught market search techniques and cashew kilo price negotiation skills. Cashew farmers have not participated much in workshops and seminars (Tables 35 and 36) where such themes could be professionally handled.
6. The need for researchers to practise Research for Development (R4D) to help improve the cashew value chain and livelihoods of cashew farmers.

The components and contents of the proposed operational framework were therefore based on these six critical issues. Consequently, six objectives were set from the six critical issues and fed into a three-by six contingency Table with three column headings namely: “Objectives”, “Strategies” and “Responsible”. The six objectives were set as follows:

1. To ensure that the development of the cashew value chain begins correctly and in earnest.
2. To make sure a clear marketing path is chosen. If the government will choose the path of building warehouses for cashew, then it could operate as the sole agent from Ghana to trade cashew on the international commodity exchange platform. Consequently, all cashew farmers must eventually sell their dried RCN indirectly to government as in the case of cocoa. An umbrella organisation must be formed that will also ensure the establishment of a Quality Control Unit in the cashew production belt to help good international buyers keep faith with the country.

3. To ensure value chain financing (VCF) is sustainable. It is anticipated that this will be achieved by re-establishing and restoring the broken relationship between cashew farmers and banks. A seasoned consultant could help to eventually encourage banks to develop long-term loan assistance packages for cashew farmers.
4. To ensure availability of quality inputs and the observance of cultural practices. Extension will be mandated by policy to ensure cashew farmers conduct mandatory soil tests on their lands, purchase seedlings of known pedigree from approved sources and ensure cultural practices are observed for continuous improvement. Continuous Improvement in the cashew value chain will call for the formation of National Cashew Improvement Teams.
5. To ensure training and capacity building of cashew farmers are pursued. (Teaching and learning of new skills in the cashew value chain to be encouraged at workshops and seminars each year).
6. To ensure cashew research helps to improve the cashew value chain and cashew farmers' livelihoods. A paradigm shift is therefore needed to ensure researchers embrace Research for Development (R4D).

Table 47 is the prospective Operational Framework (for the Ghana government) to improve the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities.



**Table 47: Operational Framework**

<b>Objectives</b>	<b>Strategies</b>	<b>Responsible</b>
1. To ensure an earnest commencement of the cashew value chain	Lobby MoFA to establish a permanent umbrella organisation for cashew.	ACi, MUCG and IFDC
	Establish an umbrella organisation that will be directly and permanently responsible for cashew.	The Ministry of Food and Agriculture (MoFA)
	Umbrella organisation to make a choice from the following two options.	Cashew Farmers Association, Extension, Research, ACi, MUCG & IFDC
	<u>Option 1</u> Establish and operate a Warehouse Receipts System for cashew farmers.	MoFA
	<u>Option 2</u> Ghana Government to Build warehouses for RCN and be the sole exporter of raw cashew nuts from Ghana as pertains in cocoa.	MoFA Umbrella Organisation
2. To ensure that a clear marketing path is chosen	If <u>Option 1</u> is chosen, then the following must be observed: Engage the services of a Commodity and Trades lawyer who will be put on a retainer to negotiate RCN kilo-prices with significant stakeholders yearly on behalf of cashew farmers.	The Cashew Farmers Association
	Employ astute marketing officers with relevant backgrounds and experiences in international trade, banking and finance who are adept in the use of powerful search engines on the internet to trade cashew on the international commodity exchange platforms of valued and inclusive markets for cashew farmers.	Cashew Farmers Association.
	If <u>Option 2</u> is chosen, then the following must be observed: The umbrella organisation will be the sole agent from Ghana to trade cashew on the international commodity exchange platforms of valued and inclusive markets.	MoFA & Ministry of Trade
	All cashew farmers must sell their dried RCN directly to Licensed Buying Companies who in turn will hand them over to the Umbrella Organisation.	MoFA & Umbrella Organisation Cashew Farmers Association
	The Cashew Farmers Association must endeavour to have a commodity and trades lawyer who will be put on a retainer to represent them on the cashew	The Cashew Farmers Association

**Table 47 Cont'd**

<b>Objectives</b>	<b>Strategies</b>	<b>Responsible</b>
	kilo price negotiating table yearly with MoFA & the Umbrella Organisation.	MoFA
	Grading and Quality Assurance of RCN must be sustained through the establishment of Quality Assurance and Disease Control Units by the umbrella organisation.	
3. To ensure sustainability of Value Chain Financing (VCF)	Re-establish/restore the broken relationship between cashew farmers and banks by engaging the services of a seasoned consultant to: re-orient their mind sets for each other, introduce respect/trust/dependence into their career paradigms to assist them as institutions that need each other.	Umbrella Organisation and ACi
	Each cashew farmer must be cautioned to avoid taking loans from traders, various banks and or Licensed Buying Companies at the same time.	Cashew Farmers' Association and the Umbrella Organisation
	Encourage banks to develop long-term loan assistance packages for cashew farmers	Umbrella organisation & ACi
4. To ensure availability of quality inputs & the observance of cultural practices for continuous improvement	Land: Cashew farmers to conduct mandatory soil tests.	Extension and Umbrella organisation
	Seedlings: Ensure farmers purchase seedlings of known pedigree from extension-approved sources.	Extension & ACi
	Planting Distance: Ensure that farmers observe this strictly per geographical location	Extension & ACi
	Cultural Practices: Ensure that cashew farmers observe these rigidly	Extension & ACi
	Fertiliser: Ensure that cashew farmers learn to produce and use enhanced compost prepared from dry cashew leaves	Extension & ACi
	Harvest: Ensure that farmers harvest RCN and dry them on tarpaulins.	Extension & ACi
	For Continuous Improvement, there must be formation of National Cashew Improvement Teams that go round to purposely identify constraints and impediments in the cashew value chain for immediate resolution. (Suggested Team members to include Agronomist/Agric. Extension Agent; Rural Sociologist; Agric. Economist and a R4D Cashew Researcher).	Umbrella organisation, Extension, Research & ACi

**Table 47 Cont'd**

Objectives	Strategies	Responsible
5. To ensure that the Training & Capacity Building of cashew farmers are pursued	Hold a series of seminars and workshops each year to:	Umbrella organisation, Extension, Research and ACi
	Help cashew farmers reinforce agronomic lessons and cultural practices already taught and also bring them up to speed on latest research development in the cashew value chain.	Umbrella organisation, Extension, Research & ACi
	Strengthen the weak two-way communication linkages in the farmer-extension-research triad.	Umbrella organisation and ACi
6. To ensure Cashew Research helps improve the cashew value chain and livelihoods of cashew farmers	Cashew Research must make a paradigm shift in its modus operandi and embrace Research for Development (R4D) to directly impact the cashew value chain and the livelihoods of cashew farmers via relevant cashew plantation transformative innovations.	Ministry of Food and Agriculture (MoFA).

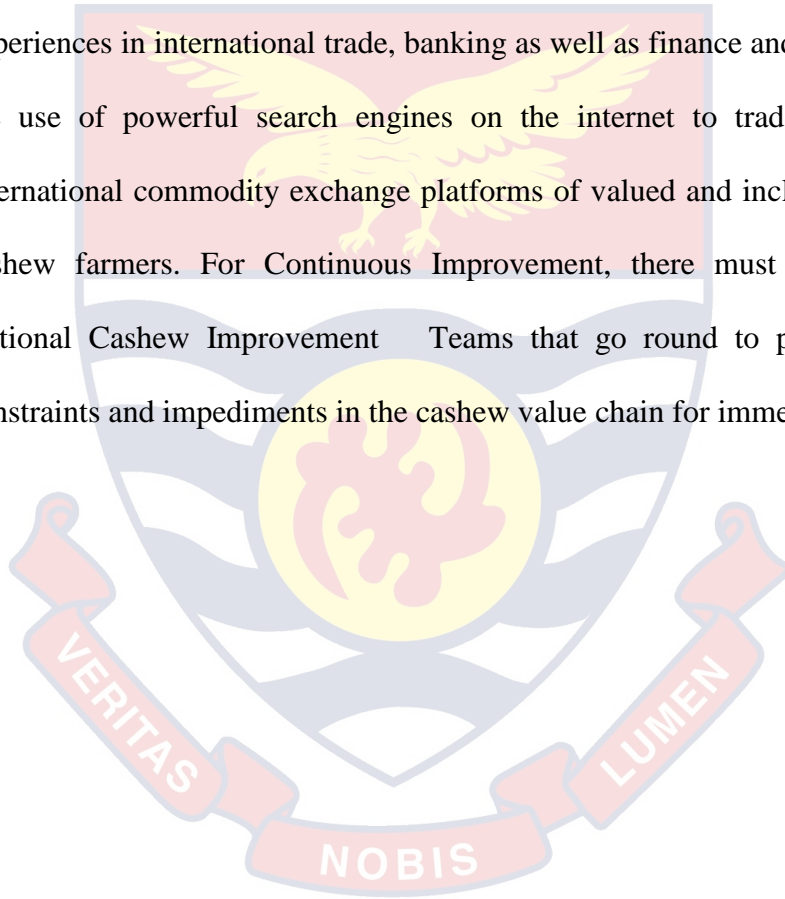
The general method adopted for marketing raw cashew nuts in Ghana must change. To date, cashew farmers sell their RCN to whoever they choose to sell to and these could be to individual traders or produce buying companies or their field officers. The RCN is, to date, gathered and exported in the main by private foreign companies. Cashew farmers in Ghana do not share in the huge profits that accrue from the sale of their RCN on the international commodity exchange platforms. The call now, is for the government of Ghana to either be the sole recipient and exporter of RCN from Ghana or introduce the Warehouse Receipt System into the cashew value chain. Foreign companies, if they so wish, can participate in both scenarios by operating as Licensed Buying Companies and or help to lift the RCN from field to government or Cashew Association warehouses

at designated places or ports. The government can then through appropriate policies, regulate the year-round availability of RCN in the country and determine for instance what quotas to release to local cashew processors to ensure progressive growth of their businesses and the endless creation of jobs as well as assure the local market of regular supply of processed cashew nuts.

### **Summary**

The respondent farmers believe there are no challenges in the formation and effective use of clusters and that they play their roles under it. There are challenges with Skills Training for Capacity Building. According to the general impression of respondent farmers, there are no challenges with sustainability of cashew Value chain financing (VCF) except in the case where they think bank officials do not understand their working systems as farmers. Though majority of the respondent farmers have not taken group loans before, those who indicated they have done so before by their responses to the items showed business traits that can help sustain cashew value chain financing. There are critical challenges with both input and output standards among cashew farmers. There are critical challenges with technological operations which are key activities in the development of the cashew value chain. In general, there are critical negative issues with cashew farmers' participation in inclusive markets. The respondent cashew farmers have not put themselves in readiness to participate in inclusive markets. There are critical challenges with the creation of a functionally dynamic policy environment.

Cashew on the average contributes approximately 55% to the livelihoods of cashew farmers. From the operational framework, cashew farmers are to engage the services of a commodity and trades lawyer who will be put on a retainer to negotiate RCN kilo-prices with significant stakeholders yearly on their behalf. The operational framework also states that the National Cashew Farmers' Association is to employ astute marketing officers with relevant backgrounds and experiences in international trade, banking as well as finance and who are adept in the use of powerful search engines on the internet to trade cashew on the international commodity exchange platforms of valued and inclusive markets for cashew farmers. For Continuous Improvement, there must be formation of National Cashew Improvement Teams that go round to purposely identify constraints and impediments in the cashew value chain for immediate resolution.



## CHAPTER EIGHT

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

The main purpose of the research was to develop an operational framework to improve the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities. This chapter put together a summary of the research findings, conclusions drawn from it and recommendations solely based on the conclusions drawn.

The research questions for the study were:

1. What are the characteristics and roles of key actors in the cashew value chain in the Wenchi and Techiman municipalities?
2. How is the support system for the cashew value chain in the Wenchi and Techiman municipalities in terms of:
  - a) Availability of inputs
  - b) Infrastructure
  - c) Policy regulation?
3. What is the status of the strengthening strategies for the cashew value chain in the Wenchi and Techiman municipalities?
4. What are the existing conditions of the cashew value chain development processes in the Wenchi and Techiman municipalities?

5. What is the level of contribution of cashew production to the livelihoods of cashew farmers in the Wenchi and Techiman municipalities as perceived by the farmers themselves?
6. What Operational Framework can be recommended to improve the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities?

A mixed methods design was used for this research work. This utilised both quantitative and qualitative research methods. The following is the summary of the key findings.

### **Summary**

#### **Summary of Findings for Research Question 1**

What are the characteristics and roles of key actors in the cashew value chain in the Wenchi and Techiman municipalities?

The mean age of cashew farmers in the Wenchi and Techiman municipalities is 55 years. The mean land size of the cashew plantations is approximately 3.4 ha while the mean distance from farmers' homes to their cashew plantations is 5.3km. Sixty-six percent of respondent cashew farmers spray their plantations with weedicides. One hundred and seven respondent cashew farmers (57.5%) use hired labour on their plantations. The contract concept is not wide spread among cashew farmers. The majority of the cashew farmers engage in drying (81.7%), bagging (90.3%) and transporting (94.1%) of their produce to sale points.

The impression among the cashew farmers is that input dealers do not perform their roles along the cashew value chain. Processors particularly struggle to purchase the RCN they need for their production because they are often unprotected in their competition with other traders who ship the RCN out of the country. According to the respondent farmers, processors do not perform their roles along the cashew value chain. Cashew farmers have cordial relations with cashew traders. However, two major issues that could positively impact the work of farmers but are not being pursued by cashew traders are the fact that they neither assist cashew farmers with loans nor organise educational programmes for them.

According to 168 farmers (90.3%), the banks in the Wenchi and Techiman municipalities are not cashew farmer friendly. The cashew farmers' general impression is that the banks are not doing what they should be doing to help develop the cashew value chain. Indeed, according to the banks themselves they are not doing fully what they are supposed to be doing to help develop the cashew value chain. In the view of AEAs, banks in the Wenchi and Techiman municipalities are generally not cashew farmer friendly.

As many as 93 respondent cashew farmers constituting 53.4% are either visited once or none at all in a whole year by AEAs. The dominant method by which AEAs reach cashew farmers according to 56 (43.4%) of the respondent farmers is Field Days. Responses from 153 cashew farmers constituting 82.7% show that cashew farmers' most preferred extension method is farm visits. Respondent farmers think extension as an institution has generally not performed



its chores adequately to help develop the cashew value chain. From the research results, there is no working relationship between cashew farmers in the Wenchi and Techiman municipalities and researchers. According to the cashew farmers, researchers are not doing what they are supposed to do to help develop the cashew value chain.

### **Summary of Findings for Research Question 2**

How is the support system for the cashew value chain in the Wenchi and Techiman municipalities in terms of: a) Availability of inputs; b) Infrastructure; and c) Policy regulation?

The availability of inputs has five components namely, knowledge/skills; extension; capital; raw materials; and market. From the research results, cashew knowledge and skills are generally available among cashew farmers. According to the respondent cashew farmers, extension is not doing what it is supposed to do to help develop the cashew value chain. Financial support is not available to cashew farmers in the cashew value chain. Raw materials for cultivating cashew are available in the Wenchi and Techiman municipalities. Though the local market is available, the critical components which will cause it to be well established and competitive are unavailable. International markets are not available to cashew farmers in the Wenchi and Techiman municipalities. Also physical infrastructure necessary for the development of the cashew value chain is only partially developed in the study area. The range of policies offered in the cashew industry is not comprehensive.

### Summary of Findings for Research Question 3

What is the status of the existing strategies for strengthening the cashew value chain in the Wenchi and Techiman municipalities?

The components of the strengthening strategies are awareness-raising; capacity building; research; information sharing; public policy dialogue; and partnership building. It is evident from the research results that awareness-raising about the economic importance of cashew is not being pursued at all in the Brong-Ahafo Region. Capacity building is also not being pursued diligently in the development of the cashew value chain. There is no working relationship between researchers and cashew farmers so the research sub-system has not been able to help improve cashew production. Apart from extension disseminating information, there is no information sharing elsewhere along the cashew value chain. According to respondent farmers, there is public policy dialogue in the cashew value chain in the Wenchi and Techiman municipalities.

Cashew farmers claim there are no joint ventures across actor categories on the cashew value chain. They also indicated that there are no affiliations or links among the various actors, there is no cooperation or mutual aid among actors and no collaboration or team work among actors. There are no formal relationships among them and other actors on the cashew value chain. There are no platforms that for instance bring cashew farmers, extension, research, input dealers, financial institutions and traders together for discussions in the Wenchi and Techiman municipalities.

#### Summary of Findings for Research Question 4

What are the existing conditions of the cashew value chain development processes in the Wenchi and Techiman municipalities?

There are seven cashew value chain development processes in the Wenchi and Techiman municipalities. These are formation and effective use of cashew clusters; skills training for capacity building; sustainability of cashew value chain financing (VCF); input /output standards; technological operations; cashew farmers' participation in inclusive markets; and a functionally dynamic policy environment.

Respondent cashew farmers believe there are no challenges in the formation and effective use of clusters. There are, however, challenges with skills training for capacity building among cashew farmers. Cashew farmers have not been trained to either be well-informed about the standards the RCN market wants or be able to locate excellent cashew market centres. Both cashew farmers and bank officials do not understand each other's paradigm and operating system. The general impression among the cashew farmers is that there are critical challenges with both input and output standards among them. There are critical challenges with Technological operations. Though the cashew farmers do everything possible to reduce their transaction costs and are willing to engage directly in external trade beyond the local level, there are critical issues with their intended desires to participate in inclusive markets. Analysis of the research data shows that there are critical challenges with the creation of a functionally dynamic policy environment. Apart from cashew farmers claiming to have so far played

their roles under formation and effective use of clusters, they admitted that for the rest of the six value chain development processes, they have not played their roles.

### **Summary of Findings for Research Question 5**

What is the level of contribution of cashew production to the livelihoods of cashew farmers in the Wenchi and Techiman municipalities as perceived by the farmers themselves?

The level of contribution of cashew to the livelihoods of cashew farmers and their households in the Wenchi and Techiman municipalities is 55%. The majority (96.2%) of cashew farmers numbering 179 practised the phenomenon of Multiple Enterprise where each cashew farmer produced other crops or engaged in off-farm economic activities to boost their livelihoods. Apart from cashew, the farmers also planted other crops in different permutation. Five dissimilar tree crops namely cocoa, oil palm, orange, plantain and banana were planted. They also planted four field crops namely cassava, cocoyam, groundnuts, maize and mushrooms. Some also planted vegetables such as local garden eggs, tomatoes, okro and hot pepper. Beekeeping was engaged in by one farmer. The off-farm economic activities engaged in by some of the respondent cashew farmers were construction works, information centre management, tailoring, distillation of alcohol, teaching as well as preparation and sale of local cuisine.

## Summary of Findings for Research Question 6

What Operational Framework can be recommended to improve the cashew value chain and livelihoods of cashew farmers in the Wenchi and Techiman municipalities?

An operational framework built upon six critical issues can be used to improve the cashew value chain in the Wenchi and Techiman municipalities. The six critical issues covered a commitment to ensure the development of the cashew value chain begins in earnest; Choice of a clear marketing path; Sustainability of value chain financing (VCF); Availability of quality inputs and the observance of cultural practices; Training and capacity building of cashew farmers; and the need for Research for Development (R4D) to impact the cashew value chain positively. To build the operational framework, six objectives were set from the six critical issues and analogous strategies were developed to help achieve those objectives. Some of the strategies include the establishment of an umbrella organisation that will be directly responsible for cashew; choosing between establishing a warehouse receipt system for cashew or building warehouses; the need for the Cashew Farmers Association to engage the services of a commodity and trades lawyer who will negotiate cashew kilo-prices with buyers on their behalf; Restoration of the relationship between cashew farmers and banking institutions to ensure sustainability of cashew value chain financing (VCF), as well as stepping up the number of seminars and workshops for training and capacity building of cashew farmers per year. To fulfil Continuous Improvement requirements as suggested by both the Constraints Theory and the Value Chain

Concept, the formation of Cashew Improvement teams is inevitable and imminent.

### Conclusions

From the key findings, the following conclusions can be drawn

1. The business relationship between cashew farmers and the banks in the Wenchi and Techiman municipalities is in a very poor shape as a result of years of mistrust and lack of understanding of each other's modus operandi.
2. Cashew farmers' preference of extension method is farm visits but extension does not use that as its dominant method.
3. The farmer-extension-research triad in the cashew value chain has broken down.
4. Cashew farmers do not have a strong bargaining power for their produce. The local cashew market though available, is systemically dysfunctional.
5. There are no comprehensive policies in the cashew value chain to protect the cashew farmers and other key actors from exploitation by cashew traders.
6. There is limited attraction of potential cashew farmers to the cashew industry because awareness-raising in the form of radio, TV and print media adverts are not pursued in the Wenchi and Techiman municipalities.
7. Capacity building and training are not being pursued diligently in the development of the cashew value chain.

8. There are currently no platforms that bring cashew farmers, extension, research, input dealers, financial institutions and traders together for discussions in the Wenchi and Techiman municipalities.
9. There are seven cashew value chain development processes in the Wenchi and Techiman municipalities. These are formation and effective use of cashew clusters; skills training for capacity building; sustainability of cashew value chain financing (VCF); input/output standards; technological operations; cashew farmers' participation in inclusive markets; and a functionally dynamic policy environment. Cashew farmers have played their roles under formation and effective use of clusters, but not in the others.
10. Cashew farmers are not made aware of the market demands and the preferences of their prospective customers for them to select and purchase the right seedlings for the establishment of their cashew plantations.
11. Cashew farmers generally sell their RCN impetuously.
12. There can be no meaningful value chain financing of cashew production by banking institutions for as long as both cashew farmers and bank officials do not understand each other's paradigm and operating system.
13. There are blithe violations of the law so spurious agro-chemicals can enter the market very easily to eventually hurt the financial assets of cashew farmers.

14. Some critical basics like soil tests to reveal soil type and depth as well as recommended seedling pedigree needed to guarantee success of plantations are absent.
15. Cashew farmers cannot engage in inclusive markets by themselves any time soon unless aided by competent professionals.
16. There is no strong policy environment from which strategic guiding principles will emanate for the development of the cashew value chain.
17. Cashew production contributes substantially (55%) to the livelihoods of cashew farmers in the Wenchi and Techiman municipalities and it can be improved.
18. The proposed Operational Framework which takes into consideration the need to set up a an umbrella organisation that will be directly responsible for cashew, make value chain finance (VCF) sustainable, pursue training and capacity building, insist on quality inputs and incite wakefulness to regular advertisement can help improve the cashew value chain and livelihoods of farmers in the Wenchi and Techiman municipalities

### **Recommendations**

Based on the findings and conclusions the following recommendations can be made.

1. A consultant with special skills in designing re-educative programmes must be engaged by ACi/Extension to reconcile cashew farmers and banks in the Wenchi and Techiman municipalities so that value chain financing (VCF) will be sustainable.



2. Extension must adopt farm visit as its default method of delivery.
3. Special efforts must be made by ACi, MUCG and IFDC jointly to strengthen the farmer-extension-researcher triad in the Wenchi and Techiman municipalities.
4. The Cashew Association must enlist the services of an experienced Commodity and Trades lawyer who will be put on a retainer to represent cashew farmers each year at the cashew kilo-price negotiation table.
5. Extension must ensure the regular provision of marketing information support for farmers' cashew businesses to pick and help heal the local systemically dysfunctional cashew market.
6. Extension, MUCG, ACi and IFDC to jointly lobby government to establish an umbrella organisation that will be directly responsible for cashew and whose mandate among others will include the development and enactment of comprehensive policies in the cashew value chain to eventually protect cashew farmers and other key actors from exploitation by foreign business concerns.
7. Extension, the Cashew Association and ACi must come together to plan an aggressive and highly educative regular advertisement of the economic importance of cashew on radio, TV and the print media to forcefully increase people's wakefulness to the nutritional benefits of cashew, its tremendous capacity to help reduce poverty among the suffering masses and the numerous commercial products obtainable from it.
8. Extension must task itself to build capacity of cashew farmers. Extension can for instance acquire the skill to prepare enhanced compost which takes only

two weeks to be ready for use and teach this skill to all cashew farmers to strategically bring relative low-cost advantage to them while their average cost undercuts those of their competitors.

9. Business Support Agencies such as ACi, IFDC and MUCG must come together to create platforms that bring cashew farmers, extension, research, input dealers, financial institutions and traders together for regular cashew value chain discussions.
10. To avoid farmers' selling their RCN indiscriminately and impetuously for the lack of capacity to locate excellent markets, extension and ACi can team up to send SMS messages on best markets to cashew farmers on their cell phones until a government directive determines how cashew marketing should finally be handled in Ghana.
11. The Cashew Farmers' Association must employ the services of marketing officers with backgrounds in international trade to launch out their RCN onto the international commodity exchange platforms of valued and inclusive markets.
12. Extension must encourage cashew farmers to pursue growth of their cashew plantations by both increased productivity and expansion in land size in order to boost their revenue.
13. The Ghana Government must by law, establish an umbrella organisation that will be directly responsible for cashew so that it can legitimately own the Operational Framework for earnest implementation.

14. The government must challenge the organisation that will be directly responsible for cashew to select the better of the two options listed in the Operational Framework in partnership with the Cashew Farmers' Association, Extension, Research, MUCG, IFDC and ACi.
15. Action Plans with timelines must be prepared and implemented by the umbrella organisation that will be directly responsible for cashew, Extension, Research, the Cashew Farmers Association, MUCG, IFDC and ACi based on the strategic areas of the Operational Framework.

### **Recommendations for Further Research**

1. The Operational Framework developed for cashew in this research work could be considered as generic and therefore applicable to other tree crops to improve their value chains and livelihoods of farmers that cultivate them.
2. Research into biochemical and breeding methods to increase the shelf life of raw cashew nuts (RCN) to one year minimum. This will create a better chance for cashew trade because farmers will be able to stockpile the cashew commodity to their advantage.
3. Research into the preparation of enhanced compost (ready within 14days instead of three months) using dried cashew leaves which abound on cashew plantations. This will give competitive advantage to cashew farmers in Ghana.
4. Research into how to form an international market with a price regulatory mandate for cashew.

5. Research into how to get cashew farmers to repay their bank loans promptly using sociological concepts. This will help sustain value chain financing (VCF).
6. Evaluate the work of ACi to ascertain whether it is fulfilling its mandate in the rest of the cashew producing areas.



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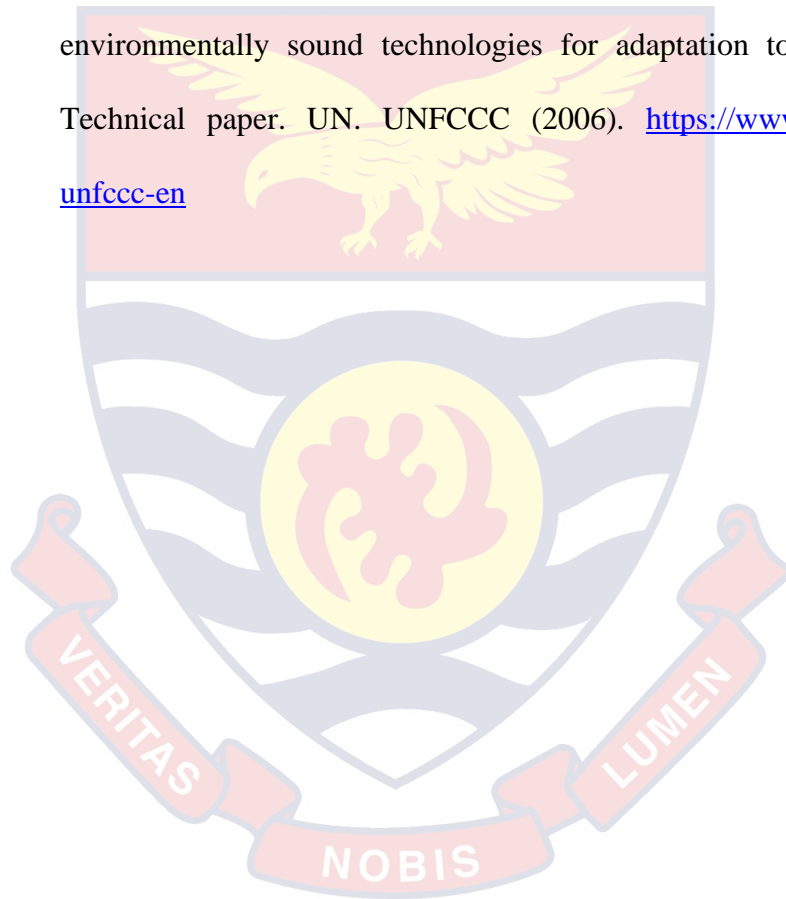
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## APPENDICES

### APPENDIX A

#### Interview Schedule for Cashew Farmers

#### Specific Objective 1: Farmers' perception of the characteristics and roles of actors

1. Name:.....

2. Age at last birthday:.....years

3. Sex : 1= Male 2= Female

4. Educational Background : 1= Primary 2= MSLC 3= JHS 4=SSS  
5= Secondary

6=Sixth-form 7= Vocational 8=Secretarial

9=Polytechnic 10= University

11=illiterate

5. Have you harvested before?

1= Yes 2= No

6. What is the size of your cashew plantation?.....acres ( hectares:..... )

7. How far is your cashew plantation from your home?.....miles (.....km)

8. What is the size of your household including yourself? .....

9. How do you sell your raw cashew nut (RCN) most of the time?

1= bulk sale 2= piece meal sale (i.e. in bits)

10. Do you sometimes spray insecticides on your cashew plants?

1=Yes                      2=No

11. Do you sometimes spray fungicides on your cashew plants?

1=Yes                      2=No

12. Do you sometimes spray weedicides on your cashew plantation?

1=Yes                      2=No

13. What type of labour do you often use on your cashew plantation?

1=Household labour      2=Hired labour      3= Both

14. Have you signed a contract with a buyer of your Raw Cashew Nut (RCN) before?

1=Yes                      2=No

15. Have you broken a contract before because some other buyer came later with better terms?

1=Yes                      2=No                      3= N/A

**16. Level and role in value addition:**

*Please tick the right column to indicate whether you perform the following activities or not with your raw cashew nut (RCN)*

	<b>Activities</b>	<b>Yes</b>	<b>No</b>
a)	Drying		
b)	Bagging		
c)	Transporting		
d)	Processing		
e)	Packaging		
f)	Others (specify)		

**17. Farmers' perception of the roles of input dealers: Do input dealers perform their roles according to cashew farmers?**

ITEMS	YES	NO
a) Do input dealers sometimes sell to you on credit?		
b) Is the quality of chemicals you buy from input dealers always genuine?		
c) Do input dealers generally explain to you how to use the agro-chemicals they sell to you?		
d) Do input dealers sometimes come to your farm to sell their wares to you?		
e) Does the input dealers' association sometimes organise educational programmes for you?		
f) Have you ever complained to an input dealer about the poor quality of his product before?		

**18. Farmers' perception of the roles of processors: Do processors perform their roles according to cashew farmers**

ITEMS	YES	NO	N/A
a) Do cashew processors sometimes come to where you live and work to buy your RCN?			
b) Do you have particular cashew processors that ask you to supply them RCN?			
c) Do cashew processors pay you on the spot when			



they buy your cashew?			
d) Has any cashew processor granted you a loan for your cashew work before?			
e) Do cashew processors prefer that you sell to them in bulk?			
f) Has any processor organised any educational programme on cashew for you before?			

**19. Farmers' perception of the roles of traders: Do traders perform their roles as perceived by farmers?**

ITEM	YES	NO
a) Do cashew traders come to where you live and work to buy your cashew?		
b) Do cashew traders prefer to buy your cashew in bulk?		
c) Are you satisfied with the price per kilo offered by cashew traders?		
d) You do not generally suspect the scales traders use to measure your cashew, do you?		
e) Do cashew traders generally pay you on the spot?		
f) Has any cashew trader offered you a loan for your cashew work before?		
g) Has any trader or traders association organised any educational programme on cashew for you before?		

**20. Farmers' perception of the roles of banking institutions: Do banking institutions play their roles according to cashew farmers?**

ITEM	YES	NO	N/A
a) Has any bank visited you personally as a cashew farmer where you live and work to offer you a financial package before?			
b) Was the loan amount granted you adequate?			
c) Was the loan granted at the correct time?			
d) Has any bank offered your cashew society/union a financial package for their members before?			
e) Was the loan amount per farmer in the union/society adequate?			
f) Did the loan to the society/union come at the correct time?			
g) Were the bank interest rates acceptable to you as a cashew farmer?			
h) Did the bank organise advisory services for beneficiary cashew farmers before granting them the loans?			
i) Are banks in the Brong-Ahafo generally cashew farmer friendly?			

**21. Farmers' perception of the roles of agricultural extension: Does Agricultural Extension play its roles according to cashew farmers?**

a) Do AEAs visit you on your cashew plantations?

1= Yes 2= No

b) On the average, how often are you visited in a month by an AEA?

1=5 times a month 2= 4 times a month 3=3 thrice a month

4=twice a month

5=Once a month 6= N/A 7=Other, please state.....

c) By what extension method do AEAs reach you most of the time?

1=Farm visits 2=Home visits 3= Mobile phone 4=Field days

5= Demonstrations

d) Which is your preferred extension method?

1=Farm visits 2=Home visits 3= Mobile phone 4=Field days

5= Demonstrations

ITEM	YES	NO
e) Do you feel free to put questions that bother you about your cashew to AEAs?		
f) Do AEAs always have ready answers for your questions?		
g) Do AEAs regularly bring you new information on cashew?		
h) Have you been invited by AEAs to attend any workshop in the past two years?		
i) Has any AEA carried any of your production challenges		

to research before?		
j) Have you received any research information from any AEs in the past one year?		
k) Whenever there is an outbreak of disease in the cashew industry, do you receive timely information or what we call action alerts from AEs?		
l) Do you receive from AEs customised information (also called thematic briefs) on cashew production techniques?		
m) Do you receive information from AEs for the management of your cashew farms?		
n) Do you receive information on family living (sanitation/procreation/sib-ship/clothing of children/how to take care of invalids/ etc.) from AEs?		
o) Do you receive any agrochemical input advice from AEs?		
p) Do you get clear policy directives from extension to direct your work as a cashew farmer?		
q) Do you receive marketing information support from AEs for your cashew business?		
r) Do you get financial credit support from others through extension for your cashew business?		
s) Have AEs taught you how to harvest your cashew?		

**22. Farmers' perception of the roles of Research: Does research play its roles according to cashew farmers?**

ITEMS	YES	NO
a) Have you received any information from research on cashew through extension in the past two years?		
b) Have you been invited by researchers for interactions at a research station before?		
c) Did you have researchers as close allies before you started harvesting your cashew?		
d) Did researchers make you aware of what type of RCN fetches the most money on the world market before you planted your cashew?		
e) Did researchers influence the planting materials you selected for establishing your cashew plantation?		
f) Has any researcher visited your cashew plantation before?		
g) Has any researcher talked with you about your cashew production before?		

**Specific Objective 2: To evaluate the support system for cashew farmers in the cashew value chain of the Wenchi and Techiman municipalities in terms of a) availability of inputs b) infrastructure and c) policy regulation**

**Availability of inputs**

(The availability of inputs has five components namely, knowledge and skills; extension; capital; raw materials; and market)

**1. Are cashew knowledge and skills available?**

No.	Technology	Are you aware of it?		If yes, have you used it/them before?	
		Yes	No	Yes	No
a)	The need for cashew farmers to use planting materials from extension-approved clonal nurseries				
b)	Techniques for the preparation of enhanced compost in two weeks				
c)	Techniques for selecting grafting materials				
d)	Techniques of grafting				
e)	Techniques of canopy substitution				
f)	Techniques of cutting back branches that have interlocked with branches of other				

	trees				
g	Top working machine available at MoFA office				

**2. Extension Support**

**3. Is financial support available to farmers in the cashew value chain?**

ITEMS	YES	NO	N/A
a) Are financial resources available from some banks for cashew farmers in the Wenchi and Techiman Municipalities?			
b) Are some financial packages available occasionally to cashew farmers from government?			
c) Are some financial packages available occasionally to cashew farmers from some NGOs?			
d) Have you received a bank loan before?			
e) Has the loan granted you by the bank adequate for your work?			
f) Are you aware of any special bank arrangements that help cashew farmers pay back their loans promptly?			

g) Are there cordial relationships between financial institutions and cashew farmers in the Wenchi and Techiman Municipalities?			
h) Do cashew farmers enjoy special privileges at banking institutions in the Wenchi and Techiman Municipalities?			
i) Do cashew farmers receive loans for their cashew production at the correct time?			
j) Do some banks in the Wenchi and Techiman Municipalities educate beneficiary cashew farmers on how best to use the monies before granting them loans?			
k) Do some banks in the Wenchi and Techiman Municipalities educate farmers on the negative implications of defaulting in loan repayment?			

**4. Are raw materials for cultivating cashew available?**

ITEMS	YES	NO
a) Is land for cashew cultivation easily available in the Wenchi and Techiman Municipalities?		
b) Is land tenure well managed in the Wenchi and Techiman Municipalities?		
c) Is land for cashew cultivation quite cheap in the Wenchi		



and Techiman Municipalities?		
d) Are cashew seedlings available for sale at private extension-approved clonal nurseries in Wenchi and Techiman Municipalities?		
e) Are cashew clonal seedlings sold at the private extension-approved nurseries in Wenchi and Techiman Municipalities expensive?		
f) Are agro-chemicals for cashew cultivation available in Wenchi and Techiman Municipalities?		
g) Is there an agro-chemical shop in the area where you live that serves the needs of your cashew crops?		
h) Have the agro-chemicals you have purchased so far for your cashew been genuine ones?		
i) Was there sufficient rain water for your cashew seedlings at transplanting?		
j) Has there so far been sufficient rain water for your established cashew plantation?		
k) Is there a shop from which you can buy compost for your cashew plants?		
l) Are labourers easily available for hire to work on cashew plantations?		
m) Is the cost of labour for work on your cashew plantation financially manageable?		

**5. A) Is the local market available to cashew farmers in the Wenchi and Techiman Municipalities?**

ITEMS	YES	NO
a) Do you get market prices of cashew through the radio?		
b) Do you by yourself have sufficient information about where to get the best selling prices for your cashew nut?		
c) Is there a system that helps farmers each year to determine the kilo price for cashew?		
d) Is the cashew market easily accessible such that you can sell your RCN to anybody of your choice?		
e) Is there a cashew warehouse where cashew farmers can stock pile their RCN till the kilo price appreciates significantly?		
f) Do you know what specifications your cashew customers want?		
g) Do you produce to meet the expectations of your cashew customers?		
h) Do you receive information on cashew markets on your mobile phone?		
i) Do you get transport easily to cart your RCN to cashew sale points?		

**5B. Are international markets available to cashew farmers in the Wenchi and Techiman Municipalities?**

ITEM	YES	NO	I don't know
a) Is there an office known to you in the Brong-Ahafo from which you can get information about international cashew trade?			
b) Is there any designated government or private office in the Brong-Ahafo that advises cashew farmers on foreign cashew trade?			
c) Have you received training in how to get foreign contacts for cashew trade?			
d) Have you ever been trained in how to engage in international cashew trade?			
e) Will you want to participate in international trade of cashew?			

**6. Is the requisite physical infrastructure for the development of the cashew value chain available to cashew farmers?**

ITEMS	YES	NO
a) Is there a road close to your cashew plantation?		
b) Is the closest road to your cashew plantation within walking distance?		

c) Is the closest road to your plantation generally in good condition?		
d) Are there any government storage facilities for cashew in your community?		
e) Can you communicate with others through your mobile phone from your cashew plantation?		

**7. Is the range of policies offered in the cashew industry comprehensive?**

ITEMS	YES	NO
a) Are there policies regarding what lands can be used for cashew plantations?		
b) Are there policies that determine what type of cashew planting material to use?		
c) Are there policies that show where farmers should purchase their planting materials from?		
d) Are there policies that ensure that cashew farmers contact Agricultural Extension Agents for training before they start their cashew plantations?		
e) Are there policies that direct farmers on which soils to plant cashew?		
f) Are there policies that ensure cashew farmers join cashew unions, societies or associations?		

g) Are there policies that prescribe who qualifies to work as an input dealer in the cashew industry?		
h) Are there policies which determine the minimum quality of agro-chemicals allowable on cashew plantations?		
i) Are there policies that compel input dealers to educate farmers from time to time?		
j) Are there policies on cashew that protect cashew farmers from exploitation by input dealers?		
k) Are there policies on cashew that protect cashew farmers from exploitation by processors?		
l) Are there policies on cashew that protect cashew farmers from exploitation by traders in RCN?		
m) Are there policies that determine RCN quotas that farmers can sell out to export market traders to ensure local processors get enough to process year-round?		
n) Are there policies which ensure the operationalisation of warehouse receipts system for cashew in the Brong-Ahafo Region?		
o) Are there policies which ensure the operationalisation of guaranteed price system for cashew in the Brong-Ahafo Region?		

**Specific Objective 3: To assess the strengthening strategies of the cashew value chain in the Wenchi and Techiman Municipalities of the Brong-Ahafo Region**

(Strengthening strategies include awareness-raising; capacity building; research; information sharing; public policy dialogue; and partnership building).

**1. Is awareness-raising about the economic importance of cashew being pursued diligently?**

ITEM	YES	NO
a) Are there radio adverts on RCN in the Brong-Ahafo Region from time to time?		
b) Are there TV adverts on RCN in the Brong-Ahafo Region from time to time?		
c) Are there newspaper adverts on RCN in the Brong-Ahafo Region from time to time?		
d) Are there national programmes from time to time to forcefully increase people's wakefulness to the nutritional benefits of cashew?		
e) Are there national programmes to forcefully increase people's wakefulness to the tremendous capacity of cashew to help reduce poverty among the suffering masses?		
f) Are there national programmes to forcefully increase people's wakefulness to the numerous commercial		

products obtainable from cashew?		
g) Are there adverts in the Brong-Ahafo Region which direct potential farmers to where they can generally get information on cashew?		
h) Are there adverts in the region which direct potential farmers to where they can purchase cashew clonal seedlings of known pedigree?		
i) Are there adverts in the Brong-Ahafo that show farmers where to sell their RCN for competitive prices?		

**2. Is capacity building being pursued diligently?**

ITEM	YES	NO
a) Have you been trained by extension in grafting techniques?		
b) Have you been taught by extension what the recommended planting distance for cashew is?		
c) Have you received training from extension in how to correctly transplant cashew seedlings on the field?		
d) Have you received training from extension in the preparation of compost?		
e) Have you received training from extension in agro-chemical selection?		
f) Have you received training from extension in how to apply agro-chemicals to your cashew?		

g) Have you received training from extension in how to prune your cashew trees if need be?		
h) Have you been trained in cashew canopy substitution techniques?		
i) Have you been trained by extension in cashew market search techniques?		
j) Have you been trained by extension in harvesting techniques?		
k) Have you received any training from extension in cashew kilo-price negotiation skills?		

**3. Has the research sub-system helped to improve cashew production?**

ITEMS	YES	NO
a) Did the research sub-system conduct any soil tests on your land before you started transplanting your cashew seedlings?		
b) Did the research sub-system recommend any planting materials for you to use in establishing your plantation?		
c) Has the research sub-system taught you how to prepare enhanced compost in two weeks?		
d) Has the research sub-system recommended to you any preferred agro-chemicals for cashew plantations?		
e) Has the research sub-system shown you how to cultivate		



and produce organic cashew?		
f) Has the research sub-system recommended any harvesting method to you?		
g) Has the research sub-system helped you to conduct a market survey before?		
h) Has the research sub-system provided any solutions to help cashew farmers cope with the effects of harsh weather (particularly rainstorms that cause many flowers to abort and sometimes inadequate rainfall)?		
i) Do researchers organise farm trials on cashew farmers' fields?		
j) During on farm trials, are other cashew farmers invited to observe what goes on?		
k) Do researchers answer your questions when they come for farm trials?		
l) Do researchers identify cashew problems by themselves when they come for farm trials?		
m) Do researchers advice on problems they observe on cashew farmers' fields?		
n) Do researchers organise field days on which they answer cashew farmers' questions?		
o) Do researchers demonstrate pruning on some cashew farmers' fields?		

p) Do researchers demonstrate thinning on some cashew farmers' fields?		
q) Do researchers demonstrate spraying of insecticide on some cashew farmers' fields?		
r) Do researchers select fresh land on some cashew farmers' plantation and demonstrate lining and pegging plus how to prepare holes and how to transplant cashew in them?		
s) Do researchers teach farmers how to transplant and take care of their clonal seedlings when they go to buy them from research stations?		
t) Do researchers go on radio to discuss and advise on cashew cultivation?		

**4. Apart from extension disseminating information, is there information sharing along the cashew value chain?**

ITEM	YES	NO
a) Apart from extension, have you ever received information on how to take care of your cashew plants/ RCN from other actors on the cashew value chain before?		
b) Apart from extension, have you received information on cashew sector policies from other actors of the cashew value chain before?		

<p>c) Apart from extension, have you had access to advisory/technical support from other actors on the chain on how to manage your cashew plantation before?</p>		
<p>d) Apart from extension, have you ever received information from any actor on the cashew value chain that helped increase your output /sales in the cashew industry?</p>		
<p>e) Apart from the cashew union, do you belong to any cashew multi-stakeholder platform?</p>		
<p>f) Excluding extension, have you ever received an SMS message on your mobile phone informing you about where to get the best cashew market prices in Ghana before?</p>		
<p>g) Excluding extension, have you ever been told by another actor on the chain about where to get the best cashew market in Ghana before?</p>		
<p>h) Excluding extension, have you ever received an SMS message on your mobile phone from other actors informing you about the best cashew markets outside Ghana?</p>		
<p>i) Excluding extension, have you ever heard from other actors about the best cashew markets</p>		

outside Ghana before?		
j) Does the cashew union to which you belong give you information on cashew?		
k) Does the cashew association to which you belong give you information on cashew?		

**5. Is there public policy dialogue in the cashew value chain in the Wenchi and Techiman Municipalities?**

ITEMS	YES	NO
a) Do you see <i>direction setting</i> as a characteristic or hall mark in the cashew industry?		
b) Do you see <i>problem solving</i> as a characteristic or hall mark in the cashew industry?		
c) Do you see <i>knowledge sharing</i> as a characteristic or hall mark in the cashew industry?		
d) Do you see <i>discussion of issues</i> as a characteristic or hall mark in the cashew industry?		
e) Do you see <i>debate of issues</i> as a characteristic or hall mark in the cashew industry?		

**Partnership building**

**6. Is there partnership building along the cashew value chain in the Wenchi and Techiman Municipalities?**

ITEM	YES	NO
a) Are there joint ventures across actor categories on the cashew value chain?		
b) Are there affiliations (links) among the various actors on the cashew value chain?		
c) Is there cooperation (mutual aid) among actors along the cashew value chain?		
d) Is there collaboration (team work) among actors on the cashew value chain?		
e) Are there alliances (coalitions or unions) among actors along the cashew value chain?		
f) Is there a formal relationship between farmer groups and input dealer groups in the Wenchi and Techiman Municipalities?		
g) Is there a formal relationship between farmer groups and cashew processors in the Wenchi and Techiman Municipalities?		
h) Is there a formal relationship between farmer groups and produce buying companies in the Wenchi and Techiman Municipalities?		

i) Is there a formal relationship between farmer groups and financial institutions in the Wenchi and Techiman Municipalities?		
j) Are there platforms that bring cashew farmers, extension, research, input dealers, financial institutions and traders together for discussions in the Wenchi and Techiman Municipalities?		

**Specific Objective 4: To assess the major challenges of the cashew value chain development processes in the Wenchi and Techiman Municipalities of the Brong-Ahafo Region as perceived by cashew farmers.**

There are seven cashew value chain development processes in the Wenchi and Techiman municipalities. These are formation and effective use of cashew clusters; skills training for capacity building; sustainability of cashew value chain financing (VCF); input /output standards; technological operations; cashew farmers’ participation in inclusive markets; and a functionally dynamic policy environment.

Development	ITEMS	YES	NO
<b>Process 1</b>			
<i>There are no</i>	a. Are you generally willing to sacrifice your time for others in your union?		

<i>challenges in the formation and effective use of clusters</i>	b. Do your cashew leaders in the cashew unions have the requisite knowledge in how to keep the unions running?		
	c. Do you fully appreciate and understand the principle of the economies of scale and how it can benefit your cashew union?		
	d. Illiteracy does not pose any hindrance to the formation and sustenance of cashew unions		
	e. There is good leadership in my cashew union		
<b>Development Process 2</b>	<b>ITEMS</b>		
<i>There are no challenges with Skills training for capacity building among cashew farmers</i>	a) You have been trained to be able to locate excellent cashew market centres.		
	b) You have been trained to be well-informed about the standards the RCN market wants		
	c) You have been trained and therefore can make informed decisions for		

	yourself in the cashew business.		
	d) You have attended a capacity training workshop/seminar before		
	e) The period for the training session was in your estimation adequate		
<b>Development Process 3</b>	<b>ITEMS</b>	<b>YES</b>	<b>NO</b>
<i>There are no challenges with sustainability of cashew Value chain financing (VCF)</i>	a) Have you applied for a bank loan for your cashew before? <i>(If the response is “No”, then go straight to questions f) and g) below</i>		
	b) Did you receive that bank loan?		
	c) Was the loan approved in good time?		
	d) Bank officials did not ask for any kickbacks		
	e) Did you finish paying off the loan?		
	f) You do not understand how bank systems work.		
	g) Bank officials do not understand how farmers’ systems operate		



Development Process 4	ITEMS	YES	NO
<p><i>There are no critical challenges with both Input and Output Standards among cashew farmers</i></p>	a) Fake agro-chemicals enter the market without restraint		
	b) There is a policy that prescribes to cashew farmers the minimum acceptable cashew seedling pedigree for cultivation on cashew plantations		
	c) Generally, AEAs' knowledge about cashew is adequate		
	d) Researchers make their usefulness felt by cashew farmers		
	e) There is a policy that prescribes the minimum acceptable output quality of RCN		
	f) There is grading of RCN on the local market		
	g) Recommended packaging of RCN is enforced		
	h) Recommended RCN storage requirements are enforced		
	i) Your customers are always satisfied		

	with your services		
<b>Development Process 5</b>	<b>ITEMS</b>	<b>YES</b>	<b>NO</b>
<i>There are no critical challenges with Technological Operations</i>	a) Information on recommended soil tests was made available to me before the onset of my cashew plantation		
	b) Information on approved soil types for cashew cultivation was made available to me before the onset of my cashew plantation.		
	c) All my cashew nurseries were purchased from approved nurseries		
	d) I have observed the recommended planting distance on my cashew plantation		
	e) I know how to prepare compost		
	f) I have applied compost to my cashew trees before		
	g) I harvest my RCN from fallen cashew fruits		
	h) I dry my RCN on tarpaulin		
	i) I sell my RCN in bulk		

Development Process 6	Critical issues		
<p><i>There are no critical issues with cashew farmers' participation in inclusive markets</i></p>	a) You are literate		
	b) There are government storage facilities for cashew that are available to you		
	c) You have forcefully asked before to know how the kilo price of RCN is determined		
	d) You have forcefully requested for fair trade from the authorities in the cashew trade before		
	e) You have forcefully requested for an overhaul of the kilo price negotiating mechanism before		
	f) You do everything possible to reduce your indirect costs (transaction costs) in cashew production		
	g) You understand contracts and how they work		
	h) You are willing to engage directly in foreign trade beyond the local level		

Development Process 7	Critical issues		
<i>There are no critical challenges with the creation of a functionally dynamic policy environment</i>	a) A wide range of policies is generated every now and then for the cashew industry		
	b) A wide range of policies is enacted every now and then		
	c) A wide range of policies is regulated every now and then		
	d) A wide range of policies is reviewed every now and then		
	e) There are economic sanctions to curb premeditated violations of the cashew policies		
	f) There are economic incentives as for compliance with the cashew policies.		

**8. Do cashew farmers play their roles under formation and effective use of clusters?**

ITEMS	YES	NO
a) Do you belong to a cashew commodity cluster?		
b) Are you regular at meetings?		

c) Do you participate actively in meetings of your cashew commodity cluster?		
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**9. Do cashew farmers play their roles under skills training for capacity building?**

ITEM	YES	NO
a) Do you honour invitations to technical training workshops on cashew?		
b) When invited to technical training workshops on cashew, do you participate fully in the programmes?		
c) When you attend such workshops do you ensure that effective learning takes place by evidence of transformational change in you?		

**10. Do cashew farmers play their roles under sustainability of cashew value chain financing (VCF)?**

ITEMS	YES	NO	N/A
a) Have you taken a group loan before?			
b) Did you guarantee for each other as a group?			
c) Did you pay back the loan granted on schedule?			
d) Did you encourage other cashew farmers to pay back their loans?			

**11. Do cashew farmers play their roles under input/output standards?**

ITEMS	YES	NO
a) Do you know the input/output standards in cashew prescribed by law?		
b) Do you observe the standards prescribed by law?		
c) Have you reported any breaches in input supplies to the authorities before?		

**12. Do cashew farmers play their roles under technological operations?**

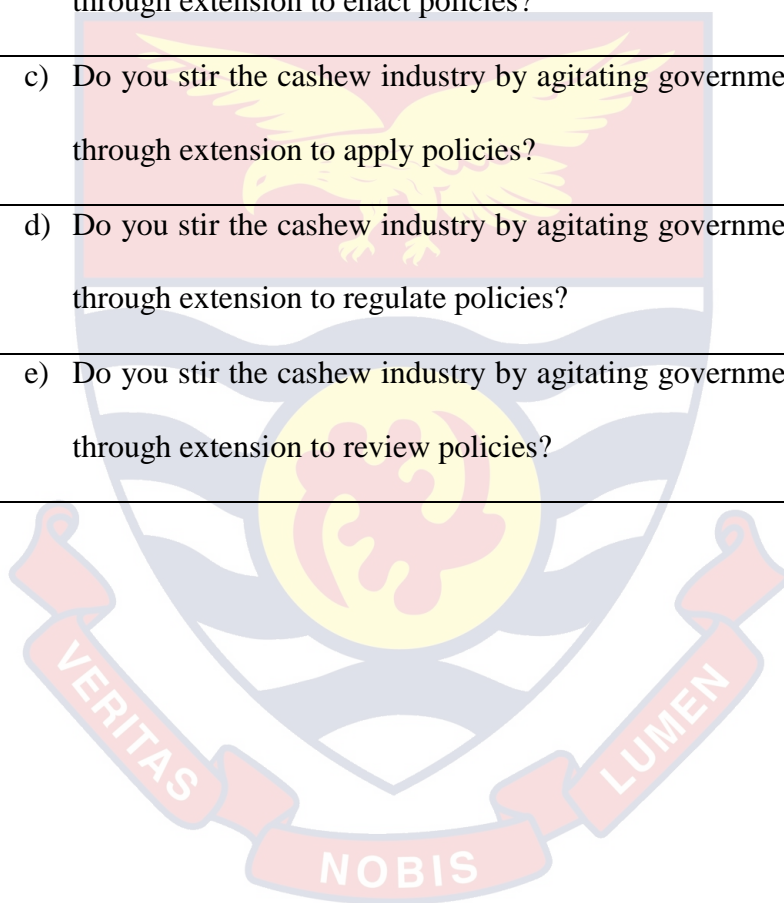
ITEM	YES	NO
a) Did you observe laid down rules and regulations of all policies in respect of site selection?		
b) Did you observe laid down rules and regulations of all policies in respect of soil suitability?		
c) Did you observe laid down rules and regulations of all policies in respect of planting material?		
d) Do you observe all cultural practices?		

**13. Do cashew farmers play their roles in getting to participate in inclusive markets?**

ITEM	YES	NO	N/A
a) Has your cashew commodity cluster engaged the services of a professional Marketing Officer?			
b) Have you put the Marketing Officer on stipend or retention so that you only pay him as and when he works for the cluster?			
c) Do you pool your cashew harvests into one as a commodity cluster?			
d) Does your cashew union organise customised adult education programmes for cashew farmers?			
e) If cashew unions organise customised adult education programmes for cashew farmers, do cashew farmers actively participate in them?			

**14. Do cashew farmers play their roles under policy environment?**

ITEM	YES	NO
a) Do you stir the cashew industry by agitating government through extension to generate policies?		
b) Do you stir the cashew industry by agitating government through extension to enact policies?		
c) Do you stir the cashew industry by agitating government through extension to apply policies?		
d) Do you stir the cashew industry by agitating government through extension to regulate policies?		
e) Do you stir the cashew industry by agitating government through extension to review policies?		





**Specific Objective 5: To ascertain the level of contribution of cashew production to the livelihood of cashew farmers in the study area as perceived by the farmers themselves.**

**1. What are your major sources of income including cashew?**

Major sources of income	Amount realised per year (in GH¢)
Cashew	
<b>Total Amount</b>	

Percentage contribution of cashew

$\frac{\text{Amount from Cashew}}{\text{Total Amount for the year}} \times 100 = \% \text{ contribution of cashew to livelihood}$

Total Amount for the year

APPENDIX B

QUESTIONNAIRE FOR EXTENSION

**Specific Objective 4: To assess the major challenges of the cashew value chain development processes in the Wenchi and Techiman Municipalities of the Brong-Ahafo Region.**

There are seven cashew value chain development processes in the Brong-Ahafo Region. These are formation and effective use of cashew clusters; skills training for capacity building; sustainability of cashew value chain financing (VCF); input/output standards; technological operations; cashew farmers’ participation in inclusive markets; and a functionally dynamic policy environment.

*Please, list the three most critical challenges under each of the following cashew value chain development processes*

<b>Development Process 1</b>	<b>Please list the three most critical issues</b>
<i>Formation and effective use of clusters</i>	a)
	b)
	c)

Development Process 2	Critical issues
<i>Skills training for capacity building</i>	a)
	b)
	c)
Development Process 3	Critical issues
<i>Sustainability of cashew value chain financing (VCF)</i>	a)
	b)
	c)

Development Process 4	Critical issues
A) <i>Input Standards</i>	a)
	b)
	c)
	B) <i>Output Standards</i>
b)	
c)	
Development Process 5	
	a)

<i>Technological Operations</i>	
	b)
	c)
<b>Development Process 6</b>	<b>Critical issues</b>
<i>Cashew Farmers' participation in inclusive markets</i>	a)
	b)
	c)
<b>Development Process 7</b>	<b>Critical issues</b>
<i>Functionally Dynamic</i>	a)

<i>Policy</i>	
<i>Environment</i>	b)
	c)

**8. Is extension doing what it is supposed to do under formation and effective use of clusters?**

ITEM	YES	NO
a) Do you have a plan of work that ensures regular formation of cashew clusters?		
b) Do you have an ongoing campaign to ensure all cashew farmers belong to cashew clusters?		
c) Do you have programmes that train cashew cluster leaders in leadership skills?		
d) Do you have programmes that ensure extension continually interacts with cashew clusters?		
e) Do you train the cashew clusters to take advantage of economies of scale?		
f) Do you train the cashew clusters to engage in bulk sales of		

their RCN?		
g) Do you have programmes that teach cluster leaders how to reduce transaction costs?		
h) Do you train the cashew clusters to share information?		
i) Do you have programmes that show cluster leaders how to keep their clusters going?		
j) Do you generally use the cashew clusters as engagement points for interacting with cashew farmers?		

**9. Is extension doing what it is supposed to do under skills training for capacity building?**

ITEM	YES	NO
a) Does extension organise skills training workshops for cashew farmers?		
b) Do the workshops generally equip cashew farmers with sufficient practice-skills?		
c) Do the workshops together attempt to cover the full range of major a. activities on the cashew value chain?		

**10. Is extension doing what it is supposed to do under sustainability of cashew value chain financing (VCF)?**

ITEM	YES	NO
a) Does extension take steps to forcefully awaken banks to the need to educate cashew farmers on how to use the loans they receive effectively?		
b) Does extension take steps to educate banks on the need to grant loans to cashew farmers with dispatch?		
c) Does extension take steps to forcefully awaken banks to the need to educate cashew farmers on what to do to sustain value chain financing?		
d) Does extension organise seminars for cashew farmers to explain the need to be loyal in the repayment of bank loans?		
e) Does extension teach cashew clusters to apply for group loans?		

**11. Is extension doing what it is supposed to do under input/output standards?**

ITEM	YES	NO
a) Does extension have guidelines to protect cashew farmers from being exploited by input dealers?		
b) Does extension teach cashew farmers how to detect fake		



agro-chemicals?		
c) Has extension set any input standards for agro-inputs in the cashew value chain?		
d) Does extension have any guidelines to forestall child labour in the cashew value chain?		
e) Does extension have guidelines for cashew farmers to direct what quality of RCN goes on to the market?		

**12. Is extension doing what it is supposed to do under technological operations?**

ITEM	YES	NO
a) Does extension encourage prospective cashew farmers to engage soil scientists to test the soils of the lands they intend using for cashew cultivation?		
b) Does extension encourage prospective cashew farmers to avoid using seeds as planting material?		
c) Does extension encourage prospective farmers to purchase clonal cashew seedlings from only recognised nurseries?		
d) Does extension organise technical workshops for potential cashew farmers?		
e) Does extension teach the correct planting distance for cashew cultivation?		
f) Are there ways by which extension is able to insist on its		

recommended planting distance for cashew?		
g) Does extension show cashew farmers how to harvest their cashew?		
h) Does extension show cashew farmers how to dry their RCN?		

**13. Is extension doing what it is supposed to do under participation of farmers in inclusive markets?**

ITEM	YES	NO
a) Does extension facilitate adult education programmes to help reduce the high illiteracy rate among cashew farmers?		
b) Does extension run programmes to develop countervailing power in cashew farmers?		
c) Does extension have programmes to influence the development of market infrastructure for cashew?		
d) Does extension have any programmes that help cashew farmers insist on cashew price transparency and fair trade?		
e) Does extension have any package to help over-haul the cashew price negotiating mechanisms?		
f) Does extension have any transactional cost reduction work-plans that can help cashew farmers?		

g) Does extension have any programmes that help farmers understand contracts?		
h) Does extension provide cashew farmers with weekly updates of international market prices of cashew?		
i) Does extension have any educational packages that forcefully awaken farmers' preparedness to access markets beyond the local level?		

**14. Is extension doing what it is supposed to do under policy environment?**

ITEM	NO	YES
a) Does extension generate policies to help develop the cashew value chain?		
b) Does extension enact policies to help develop the cashew value chain?		
c) Does extension apply the policies to help develop the cashew value chain?		
d) Does extension regulate the policies to help develop the cashew value chain?		
e) Has extension put policy review mechanisms in place to help develop the cashew value chain?		
f) Does extension have sanctions to curb premeditated violations of policies in the cashew value chain?		

g) Does extension have incentives for rewarding compliance?		
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## APPENDIX C

### EXTENSION'S PERCEPTION ABOUT OTHER ACTORS

1. Extension's perceptions about input dealers in respect of their characteristics and roles: Do input dealers do what they are supposed to do?

ITEMS	YES	NO
a) When cashew farmers request to buy agro-chemicals from input dealers, do they ask what they are going to use them for?		
b) Do input dealers generally sell to cashew farmers on credit?		
c) Is the quality of chemicals input dealers sell to cashew farmers always genuine?		
d) Do input dealers generally explain to cashew farmers how to use the agro-chemicals they sell to them?		
e) Do input dealers sometimes go to cashew farmers' farms to sell their wares to them?		
f) Does the input dealers' Association sometimes organise educational programmes for cashew farmers?		
g) Has any cashew farmer complained to any input dealers about the poor quality of any of their products before?		

2. Extension's perceptions about Cashew processors in respect of their characteristics and roles: Do cashew processors do what they are supposed to do?

ITEMS	YES	NO
a) Do Cashew processors sometimes go to farmers where they live and work to buy RCN from them?		
b) Do Cashew processors' have particular farmers who supply them with RCN?		
c) Do Cashew processors pay cashew farmers on the spot when they buy their cashew?		
d) Have Cashew processors granted any cashew farmers loans for their cashew work before?		
e) Do Cashew processors prefer to buy your cashew from cashew farmers in bulk?		
f) Have Cashew processors organised any educational programme on cashew for cashew farmers before?		

3. Extension's perceptions about Cashew traders' in respect of their characteristics and roles: Do cashew traders do what they are supposed to do?

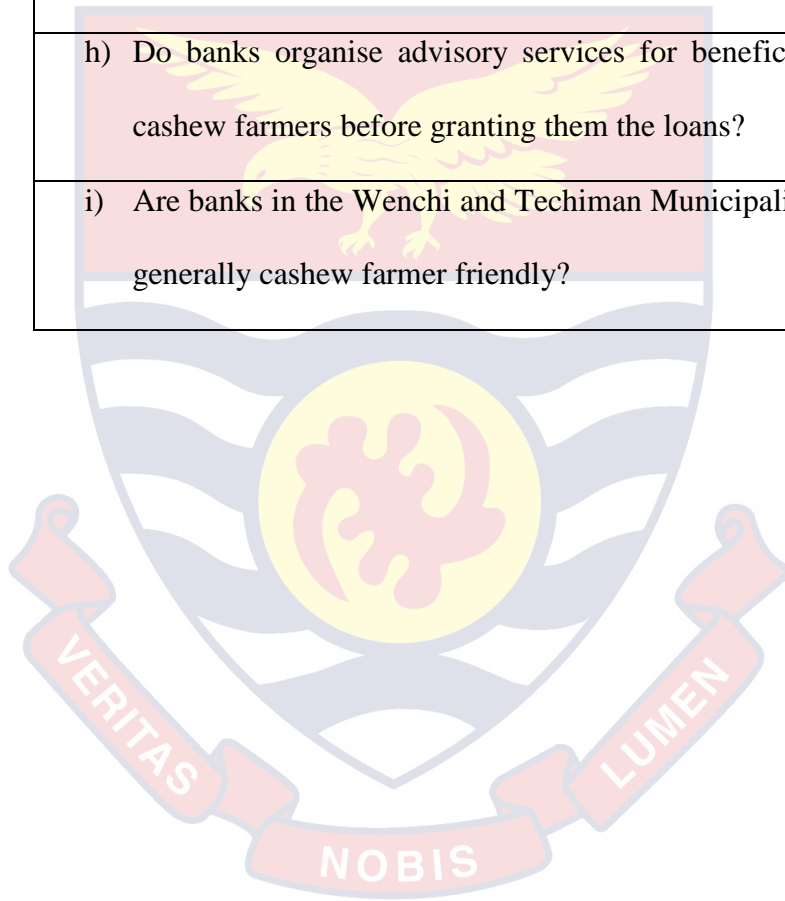
ITEMS	YES	NO
a) Do Cashew traders go where cashew farmers live and work to buy their cashew?		

b) Do Cashew traders buy cashew in bulk from farmers?		
c) Are Cashew traders satisfied with the price per kilo they offer cashew farmers?		
d) Do Cashew traders generally suspect the scale they use to measure the cashew they buy from farmers?		
e) Do Cashew traders generally pay cashew farmers on the spot?		
f) Have Cashew traders offered any cashew farmer a loan for his/her cashew work before?		
g) Have Cashew traders organised any educational programme on cashew for cashew farmers before?		

4. Extension's perceptions about Banks in respect of their characteristics and roles: Do banks do what they are expected to do?

ITEMS	YES	NO
a) Has a bank visited a cashew farmer where s/he lives and works to offer him a financial package before?		
b) If yes, was the loan amount granted the farmer adequate?		
c) Was the loan granted at the correct time?		

d) Has a bank offered any cashew society/union a financial package for their members before?		
e) If yes, was the loan amount per farmer adequate?		
f) Did the loan to the society/union get to them at the correct time?		
g) Are bank interest rates acceptable to cashew farmers?		
h) Do banks organise advisory services for beneficiary cashew farmers before granting them the loans?		
i) Are banks in the Wenchi and Techiman Municipalities generally cashew farmer friendly?		





**APPENDIX D**

**Interview Schedules And Questionnaires to Help In Part Satisfy The  
Triangulation Requirements of Specific Objective 1**

*Actors will answer the following themselves to help authenticate or rebuff the accounts given of them by cashew farmers*

**1. Input dealers’ testimony about themselves in respect of their characteristics and roles: Do input dealers do what they are supposed to do?**

- a) Name .....
- b) Age at last birthday : ..... years
- c) Sex : 1= Male 2= Female
- d) Educational Background : 1= Primary 2= MSLC 3= JHS 4=SSS  
5= Secondary 6=Sixth-form 7= Vocational 8=Secretarial 9=Polytechnic  
10= University 11=illiterate

ITEMS	YES	NO
e) When cashew farmers request to buy agro-chemicals from you, do you ask what they are going to use them for?		
f) Do you generally sell to cashew farmers on credit?		
g) Is the quality of chemicals you sell to cashew farmers always genuine?		
h) Do you generally explain to cashew farmers how to use the agro-chemicals you sell to them?		
i) Do you sometimes go to cashew farmers’ farms to sell your		

wares to them?		
j) Does your association sometimes organise educational programmes for cashew farmers?		
k) Has any cashew farmer complained to you about the poor quality of any of your products before?		

**4. Cashew processors' testimony about themselves in respect of their characteristics and roles: Do cashew processors do what they are supposed to do?**

g) Name .....

h) Age at last birthday : ..... years

i) Sex: 1= Male 2= Female

j) Educational Background : 1= Primary 2= MSLC 3= JHS 4=SSS

5=Secondary 6=Sixth-form 7=Vocational 8=Secretarial 9=Polytechnic

10= University 11=illiterate

ITEMS	YES	NO
k) Do you sometimes go to farmers where they live and work to buy RCN from them?		
l) Do you have particular farmers who supply you with RCN?		
m) Do you pay cashew farmers on the spot when you buy their cashew?		
n) Have you granted any cashew farmer a loan for his/her		

cashew work before?		
o) Do you prefer to buy your cashew from cashew farmers in bulk?		
p) Have you organised any educational programme on cashew for cashew farmers before?		

**5. Cashew traders' testimony about themselves in respect of their characteristics and roles: Do cashew traders do what they are supposed to do?**

a) Name : .....

b) Age at last birthday.....years

c) Sex : 1= Male 2= Female

d) Educational Background : 1= Primary 2= MSLC 3= JHS

4=SSS 5=Secondary 6=Sixth-form 7=Vocational

8=Secretarial 9=Polytechnic 10=University 11=illiterate

ITEMS	YES	NO
a) Do you go where cashew farmers live and work to buy their cashew?		
b) Do you buy cashew in bulk from farmers?		
c) Do you buy cashew in bits from farmers?		
d) Are you satisfied with the price per kilo you offer cashew farmers?		
e) Do you generally suspect the scale you use to		

measure the cashew you buy from farmers?		
f) Do you generally pay cashew farmers on the spot?		
g) Have you offered any cashew farmer a loan for his/her cashew work before?		
h) Have you organised any educational programme on cashew for cashew farmers before?		

**4. Banks' testimonies about themselves in respect of their characteristics and roles:**

**Do banks do what they are expected to do?**

ITEMS	YES	NO
l) Have you visited a cashew farmer where s/he lives and works to offer him a financial package before?		
m) If yes, was the loan amount granted the farmer adequate?		
n) Was the loan granted at the correct time?		
o) Have you as a bank offered any cashew society/union a financial package for their members before?		
p) If yes, was the loan amount per farmer adequate?		
q) Did the loan to the society/union get to them		

at the correct time?		
r) Are your bank interest rates acceptable to cashew farmers?		
s) Did your bank organise advisory services for beneficiary cashew farmers before granting them the loans?		
t) Is your bank generally cashew farmer friendly?		

**5. Extension’s testimony about itself in respect of its characteristics and roles: Does extension do what it is supposed to do?**

- a) Do you visit farmers on their cashew plantations? 1= Yes 2=No
- b) If yes to Q1, then, on the average, how often do you visit each cashew farmer in a month?

*1=5 times a month    2= 4 times a month    3=3 thrice a month  
 4=twice a month    5=Once a month  
 6= other, please state.....*

- c) By what extension method do you reach your cashew farmers most of the time?

1=Farm visits    2=Home visits    3= Mobile phone    4=Field days  
 5= Demonstrations

d) Which is your preferred extension method?

1=Farm visits 2=Home visits 3= Mobile phone 4=Field days

5= Demonstrations

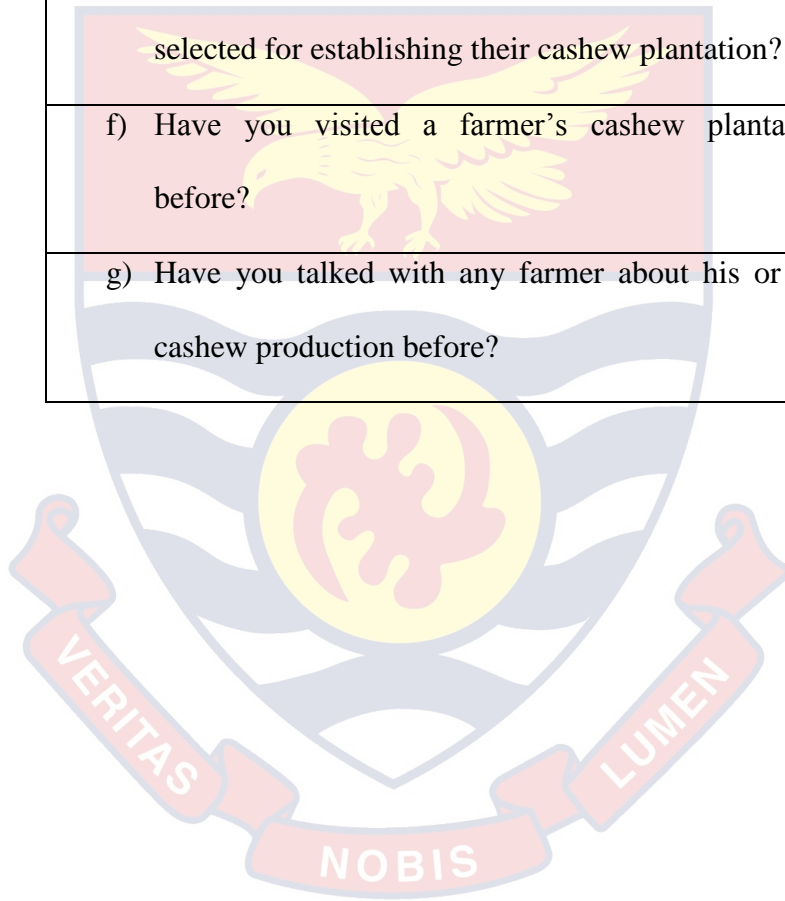
ITEMS	YES	NO
e) Do you feel free to receive questions that bother farmers about their cashew?		
f) Do you always have ready answers for cashew farmers' questions?		
g) Do you regularly bring farmers new information on cashew?		
h) Have you invited any cashew farmers to attend a cashew workshop in the past two years?		
i) Have you carried any cashew farmer's production challenges to research before?		
j) Have you given research information to farmers in the past one year?		
k) Whenever there is an outbreak of disease in the cashew industry, do you give farmers timely information (or what we call action alerts)?		
l) Do you provide farmers with customised information (also called thematic briefs) on cashew production techniques?		

m) Do you give information to cashew farmers for the management of their cashew farms?		
n) Do you give information on family living (sanitation/procreation/sib-ship/clothing of children/how to take care of invalids/ etc.) to cashew farmers?		
o) Do you give agro-input advice to cashew farmers?		
p) Do you carry clear policy directives from extension to cashew farmers to direct their work?		
q) Do you give marketing information support to cashew farmers for their cashew business?		
r) Do cashew farmers get financial credit support from others through extension for their cashew business?		
s) Have you taught farmers how to harvest their cashew?		

6. **Research's testimony about itself in respect of its characteristics and roles: Does research do what it is supposed to do?**

ITEMS	YES	NO
a) Have you given research information through extension for farmers before?		
b) Have invited cashew farmers for interactions at a research station before?		

c) Did you have any cashew farmers as close allies before they started harvesting their cashew?		
d) Did you make cashew farmers aware of what type of RCN fetches the most money on the world market before they planted their cashew?		
e) Did you influence the planting materials farmers selected for establishing their cashew plantation?		
f) Have you visited a farmer's cashew plantation before?		
g) Have you talked with any farmer about his or her cashew production before?		





APPENDIX E

Cronbach's Alpha Co-efficient of Scales

Table 48: Cronbach's Alpha Co-efficient of Scales

Scale	Cronbach's Alpha Co-efficient
<b>Specific Objective 1: Farmers' perceived characteristics and roles of actors</b>	
1. Farmers' perceived roles of input dealers: Do input dealers perform their roles according to cashew farmers?	0.756
2. Farmers' perceived roles of processors: Do processors perform their roles according to cashew farmers?	0.723
3. Farmers' perceived roles of traders: Do traders perform their roles as perceived by farmers?	0.092
4. Farmers' perceived roles of banking institutions: Do banking institutions play their roles according to cashew farmers?	0.703
5. Farmers' perceived roles of agricultural extension: Does Agricultural Extension play its roles according to cashew farmers?	0.874
6. Farmers' perceived roles of Research: Does research play its roles according to cashew farmers?	0.865

Specific Objective 2: To evaluate the support system for cashew farmers in the cashew value chain of the Wenchi and Techiman Municipalities in terms of a) availability of inputs b) infrastructure and c) policy regulation	
7. Are cashew knowledge and skills available?	0.737
8. Is extension support available?	0.874
9. Is financial support available to farmers in the cashew value chain?	0.879
10. Are raw materials for cultivating cashew available?	0.755
11. Is the local market available to cashew farmers in the Wenchi and Techiman Municipalities?	0.648
12. Are international markets available to cashew farmers in the Wenchi and Techiman Municipalities?	0.782
13. Is the requisite physical infrastructure for the development of the cashew value chain available to cashew farmers?	0.253
14. Is the range of policies offered in the cashew industry comprehensive?	0.869
Specific Objective 3: To assess the strengthening strategies of the cashew value chain in the Wenchi and Techiman Municipalities of the Brong-Ahafo Region	

(Strengthening strategies include awareness-raising; capacity building; research; information sharing; public policy dialogue; and partnership building).	
15. Is awareness-raising about the economic importance of cashew being pursued diligently?	0.821
16. Is capacity building being pursued diligently?	0.894
17. Has the research sub-system helped to improve cashew production?	0.925
18. Apart from extension disseminating information, is there information sharing along the cashew value chain?	0.832
19. Is there public policy dialogue in the cashew value chain in the Wenchi and Techiman Municipalities?	0.867
20. Is there partnership building along the cashew value chain in the Wenchi and Techiman Municipalities?	0.717
<p>Specific Objective 4: To assess the major challenges of the cashew value chain development processes in the Wenchi and Techiman Municipalities of the Brong-Ahafo Region as perceived by cashew farmers.</p> <p><i>There are seven cashew value chain development processes in the Brong-Ahafo Region. These are formation and effective use of cashew clusters; skills training for capacity building; sustainability of cashew value chain financing (VCF); input</i></p>	

/output standards; technological operations; cashew farmers' participation in inclusive markets; and a functionally dynamic policy environment.	
21. There are no challenges in the formation and effective use of clusters	0.883
22. There are no challenges with skills training for capacity building among cashew farmers	0.887
23. There are no challenges with sustainability of Cashew Value chain financing (VCF)	0.821
24. There are no critical challenges with both Input and Output Standards among cashew farmers	0.700
25. There are no critical challenges with Technological Operations	0.736
26. There are no critical issues with cashew farmers' participation in inclusive markets	0.588
27. There are no critical challenges with the creation of a functionally dynamic policy environment	0.907
28. Do cashew farmers play their roles under formation and effective use of clusters?	0.978
29. Do cashew farmers play their roles under skills training for capacity building?	0.985
31. Do cashew farmers play their roles under sustainability of cashew value chain financing (VCF)?	0.941

32. Do cashew farmers play their roles under input/output standards?	0.742
33. Do cashew farmers play their roles under technological operations?	0.864
34. Do cashew farmers play their roles in getting to participate in inclusive markets?	0.726
35. Do cashew farmers play their roles under policy environment?	0.909

