UNIVERSITY OF CAPE COAST

ECONOMIC AND SOCIAL UPGRADING BY FARMERS IN THE MANGO VALUE CHAIN IN THE SHAI-OSUDOKU DISTRICT OF THE GREATER ACCRA REGION, GHANA

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BY

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

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DECLARATION

Candidate's Declaration

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

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

Name: Khiddir Iddris

Supervisors' Declaration

We 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: Prof. Francis Enu-Kwesi

Co-Supervisor's Signature..... Date……

Name: Dr. Angela D. Akorsu

ABSTRACT

The study examined the economic and social upgrading in the mango value chain for smallholder producers in the Shai-Osudoku District of the Greater Accra Region. A mixed method research approach was used while the cross-sectional design constituted the study design. The study adopted the census approach in selecting a population size of 133 respondents. Interview schedule, interview guide, focus group discussion guides and an observation guide were used for data collection. Data analysis involved the application of descriptive statistics, chi-square test, margin analysis, ANOVA, independent t-test and a thematic analysis. The study found that mango production in the district is highly efficient and profitable. In addition, producers have economically upgraded their operations and others transcended to export their own produce, yet, there were inadequate improvement in the social conditions of workers. The study identified certain constraints that impede economic and social upgrading, as well as some potential opportunities. The study concludes that producers are experiencing economic upgrading, however, substantial improvements are still essential for social upgrading. The study recommended that Ministry of Food and Agriculture (MOFA) should effectively initiate well documented policies on mango production and scale up capacity building initiatives toward attitudinal and behaviour change to help producers appreciate the need for ensuring decent and healthy working environment for workers. Furthermore, producers should forge partnership with other mango farmer-based groups and/or buyers to create a financial scheme to address the financial and market inefficiencies.

KEY WORDS

Economic Upgrading

Mango Value Chain

Smallholder Producers

Social Upgrading

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DEDICATION

To my parents, Adishetu Issahaku and Iddris Alhassan, my mum and dad respectively.

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LIST OF ABBREVIATIONS

BBS	Bacterial Black Spot
DAMFA	Dangme-West Mango Farmers Association
DHMOFA	Department of Horticulture, Ministry of Food and Agriculture
EDIF	Export Development and Investment Fund
EU	European Union
FAGE	Federation Association of Ghanaian Exporters
FDA	Food and Drugs Authority
GAP	Good Agricultural Practice
GEPA	Ghana Export Promotion Authority
GIZ	German International Development Corporation
GSA	Ghana Standard Authority
GSS	Ghana Statistical Service
IFSSP	Improving Food Safety Systems Project
IIED	International Institute for Environment and Development
ILO	International Labour Organisation
IRB	Institutional Review Board
ITC	International Trade Centre
MELR	Ministry of Employment and Labour Relations
MiDA	Millennium Development Authority
MLGRD	Ministry of Local Government and Rural Development
MOFA	Ministry of Food and Agriculture
MOFEP	Ministry of Finance and Economic Planning

MVC	Mango Value Chain
NBSSI	National Business for Small-scale Industries
NCCE	National Commission for Civic Education
NGOs	Non-Governmental Organisations
NHIS	National Health Insurance Scheme
QMS	Quality Management System
TIPCEE	Trade and Investment Programme for Competitive Export Economy
SDGs	Sustainable Development Goals
SODAD	Shai Osudoku District Agricultural Department
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development
WBCSD	World Business Council for Sustainable Development
WGD	Worker Group Discussion

CHAPTER ONE

INTRODUCTION

The increasingly global agricultural commodity integration has provided significant opportunities for prosperity gains (Wiggins & Roepstorff, 2011). For developing economies, this has opened up upgrading prospects for higher-quality agri-food production and also holds greater promise of job creation, higher incomes and poverty reduction (United Nations Industrial Development Organisation [UNIDO], 2009a). Ghana has a number of comparative-advantages for tree-crops production (MOFA, 2012). However, the sector's value chain organisation is still largely underdeveloped (Voisard & Jaeger, 2003a), and Abdallah (2012) indicates that the mango value chain (MVC) holds great prospects for Ghanaians. Yet, few studies have investigated the economic and social upgrading prospects of the MVC. This raises certain developmental concerns such as the constraints and opportunities for MVC development, hence, my motivation to carry out this study.

Background to the Study

Value chain describes the range of activities involved in the process of bringing a commodity from the initial conception phase, through the various stages of production, to its end-market destination (UNIDO, 2009b). It provides the platform for a product to successively move through the various phases of production, handling, processing, transportations and distribution (Humphrey & Memedovic, 2006). Through these processes, transactions occur amongst several chain actors, resources change hands, contract arrangements formed, information exchanged and value is added progressively (Kaplinsky & Morris, 2000). In response to the need for improved production of goods and services, Bernhardt and

Milberg (2011) write that the path of economic development has changed because of the increasingly organised and coordinated nature of production of goods and services within value chains.

Dent, Macharia and Aloyce (2017) note that macro-economic conditions, laws, regulations, policies, standards, certifications and institutional support systems such as finance, research, innovation and communications that prevail in an economy affect a value chain performance, and USAID (2010) had earlier indicated that the development of the value chains generates economic growth while reducing poverty, enhancing livelihoods, productivity growth and market integration. Barrientos, Gereffi and Rossi (2011) expressed the view that economic development is progressively becoming associated with economic and social upgrading of production activities where new challenges and opportunities are sought for the purpose of improving living standards in low and middle income countries. Thus, successful upgrading of value chains are an increasingly vital dimensions of production, trade and employment generation.

Generally, upgrading value chains occur in two forms: economic and social upgrading. Economic upgrading involves changes in business strategy, production structure and technology, policy and the governance structure - the organisation of markets (Barrientos, Gereffi & Nathan, 2012). Social upgrading entails the improvement in the entitlements and rights of workers and small-scale producers as social actors, which enhances the quality of their working conditions and contract arrangements (Bernhardt & Milberg, 2011). Therefore, the success of upgrading value chains not only depends on a friendly-business operating environment for

chain partners (Barrientos, Gereffi & Rossi, 2010; Kaplinsky & Morris, 2000), but also on the specific prospects connected to a particular commodity, new technologies and innovations, market niches or to changes in global trade systems as indicated in the neoliberal theory (Barrientos et al., 2012).

The neoliberal theory indicates that the basis of successful upgrading depends on the prospects of a particular product, the adaptation of new technologies, continuous innovation in production activities and more importantly: the existence of open and competitive market environment (Harvey, 2005; Pieterse, 2010). The theory maintains that the open and competitive market transactions within a particular product chain such as mango will ensure efficiency, effectiveness and consumer value creation (Collins, Dent & Bonney, 2016), as it will create the niche for an effective transition of production activities along the chains to propelling economic growth (Marshall, Reid, Ambrose & Lynch, 2006).

The implicit assumption is that improving economic upgrading of production networks will translate impulsively to social-upgrading by ensuring decent working conditions, better contract arrangements for workers and enhanced market arrangements for small-scale producers along the value chain. However, it is not always the case as there are instances of market failures which impede especially social upgrading and the state has to come in to complement these failures through active labour market programmes, policies and/or strategies (Oxfam International, 2004; 2009; Sarkar, Mehta & Nathan, 2013). This role of the state is advanced by the institutional theory.

The institutional theory suggests that to ensure effective social upgrading, the use of market governance structures such as competitiveness and best practices such as economic efficiency posited by the neoliberal theory should be to inform, but not to dictate, value chain management activities (Ketchen & Hult, 2006). Through this, the prevailing economic and social conditions of downstream chain actors can be improved (Mitnick, 2006). The institutional theory complementing the neoliberal perspective will ensure inclusive growth as there is the need for human beings as social actors, in every economy, to live in an inclusive, equitable and just society as argued by the social justice philosophy (Dahan, Lerner & Milman-Sivan, 2016; United Nation [UN], 2015).

The social justice philosophical school of thought argues about how there is the need to arrange the social and economic institutions in an economy so as to distribute fairly the benefits and burdens resulting from participating in economic activities along production networks (Olsaretti, 2018). Social justice views sustainable value chain networks as those which can credibly maintain profitability without practicing forms of unjust exploitation of either workers or small-scale producers along the chain networks (Winston, 2011). In the same line, Bernhardt and Milberg (2011) also posited that social upgrading, taking the form of distribution of gains from economic upgrading in value chains and thus how social welfare and, ultimately, economic development are affected, has its philosophical basis in social justice.

Globally, various authors (Pingali, 2006; Ravallion, 2009; Roepstorff, Wiggins & Hawkins, 2011) have documented that agriculture value chains have

been the driving force for economic growth in almost all nations across the world. Ravallion (2009) has indicated that the remarkable economic and social upgrading of the agricultural value chains in China, between 1990 and 2005, had about four times the impact on reducing national poverty as growth in either the secondary (mainly manufacturing) or tertiary (mainly services) sectors. Roepstorff et al. (2011) added that upgrading of agricultural value chains has been instrumental in driving the economies of Israel, China, Thailand, Malaysia, Brazil (Roepstorff et al., 2011), and also more importantly, in sub-Saharan Africa, the sector employs about 65 per cent of the continent's population and accounts for 75 per cent of its trade, domestically (Pye-Smith, 2013; Yumkella, Kormawa, Roepstorff & Hawkins, 2011).

Pingali (2006) had earlier noted that the agriculture sector in both developed and developing nations has turned towards upgrading the value chains of its production activities for inclusive development. Thus, upgrading agricultural value chains is vital to ensuring inclusive economic growth. Therefore, prospectively, the agriculture sector will drive the economic growth of countries especially in Africa for centuries to come, and producers, at the production stage, will be the backbone of that effort (Cattaneo, Gereffi, Miroudot & Taglioni, 2013; Wiggins & Roepstorff, 2011).

Particularly, at the production stage, economic upgrading of agricultural value chains entails: land improvements, usage of value-added seedlings, innovative production methods and techniques, meeting standard and certification requirements and marketing arrangements (Arinloye et al., 2017; Mensah &

Brummer, 2016). The economic upgrading has its foundation in the neoliberal theory since the theory asserts that upgrading should be the means of fostering technological and innovative capabilities towards a more viable pattern of production and consumption (United Nations [UN], 2015).

Social upgrading at the production stage, on the other hand, involves skills training, better contract arrangements, availability of social protection schemes such as medical insurance, protective cloths and active labour market programmes (Badar, 2014; Dent et al., 2017). In the view of Collins, Dent and Bonney (2016), institutional support systems also affect the upgrading process. In addition, Abdallah (2012) suggests that identification of chain-specific constraints and the exploitation of chain-specific opportunities are also indicators for upgrading in agricultural value chains. The social upgrading as well as the institutional systems take their theoretical grounding from the institutional theory which posits that upgrading should ensure the promotion of fairly distributional gains from economic upgrading (ILO, 1999).

Internationally, Watanabe, Jinji & Kurihara (2009) disclosed that diversifying into horticultural commodities such as mangoes have shown remarkable successes of better employment creation, and poverty reduction in Asia and Latin America. Constant growth in worldwide trade in the mango fruit is increasingly forecasted, especially in markets such as the European Union, Canada, the United States, and even Asian markets, including China ("Prospectiva 2020 foresight", 2015). It is estimated that international trade in fresh mangoes will amount to approximately USD 1,799,000 million in 2029 ("Prospectiva 2020

foresight", 2015). Literature discloses that access to horticultural markets, particularly for high-value mango products, remains significant to the development of the growth of the agro-industrial system in sub-Saharan Africa (Abdallah, 2012; Humphrey & Memedovic, 2006; Nouve, Staatz, Schweikhardt & Yade, 2002).

In Kenya, Côte d'Ivoire, Zimbabwe and South Africa, there have been noteworthy achievements with market growth opportunities and sustained growth in mango and pineapple export earnings (Wilkinson & Rocha, 2009; United Nations Conference on Trade and Development (UNCTAD), 2010). These countries have, in some cases, emerged as market leaders because of diversifying towards economic and social upgrading of horticultural value chains such as mango and pineapple (Humphrey, McCulloch & Ota, 2004; Wilkinson & Rocha, 2009). Thus, the present market setting provides new opportunities for upgrading towards value-added mango production, better employment and entitlement opportunities (Staritz, Reis & Gamberoni, 2013; Yumkella et al., 2011), for African economies to diversify into for inclusive growth, as the sector is witnessing strong growth.

Ghana has numerous comparative-advantages in the production of large commercialized varieties of mango (Voisard & Jaeger, 2003b; Staatz, 2011). These prospects include political stability, geographical location, adequate sea-ports, access to large regional and international markets (Jaeger, 2008; MOFA, 2012), and suitable agricultural environment such as arable land, water and forests resources, which are fertile for different varieties of mango crop cultivation (Staatz, 2011). Mango is one of the most important fruit crop industries in the country and its production has gained global recognition (International Trade Centre (ITC), 2011;

Yidu, 2015). Okorley, Acheampong and Abenor (2014) had indicated that the mango industry is a young emerging but a viable industry, which gained attention and commercialization prospect in the late 1990s.

Mango production provides employment opportunities and serves as a source of income generation to many farm families as well as contributing to the foreign exchange earnings in Ghana (Osei, 2007; MOFA, 2012). GEPA (2017) reports that mango production in Ghana has an export share of 64% and has been ranked as the 3rd largest on the mango export supplier ladder after Brazil and Peru in the United Kingdom. The Ghanaian mango growth performance for both fresh and dried mangoes has also been recognized in other large export markets such as Western Europe and Switzerland, generating about US$25 million export earnings (den-Broek, Apenteng-Sackey, Arnoldus, Keita & Waardenburg, 2015).

Mango production extends across almost all the six ecological zones in the country (Nettey et al., 2016). However, the southern zone is the major production area with a bimodal season and major commercial production is mainly found in the Yilo Krobo municipality, North Tongu district and the Shai-Osudoku District (Boateng, 2016). Particularly, the Shai-Osudoku District is an emerging concentrated area for mango production mainly due to its bimodal system, organised nature and volume of production in the area, and more importantly its proximity to the capital market, Accra (Agbevey, 2015). The mango producers in collaboration with MOFA, in response to the economic potential in mango production in the Shai Osudoko district, formed a registered mango farmers association, Dangme Mango Farmers Association [DAMFA] (MOFA, 2014).

Since the formation of the association, Shai Osudoko district has seen the emergence of small, medium and large scale mango plantation farms. The major areas mango production is centred are Agomeda, Dodowa, Adumaya, Kongo and Ayikuma (Okorley et al., 2014). The district has benefited from various interventions by MOFA in collaboration with institutions and donor agencies such as the Millennium Development Authority (MiDA) and Ghana Export Promotion Authority (GEPA). From the MiDA funded initiative, a pack-house was built in Agomeda, for the mango producers (MOFA, 2012).

The Shai-Osudoku District is noted as one of the major mango production areas in Ghana with two major mango seasons (MOFA, 2012). According to MOFA (2014), by virtue of the district's strategic location, that is the nearness to urban Accra and Tema which have the airport and sea port respectively and the Volta Lake Transport System that links the South to the North, it has the potential to be converted into a preferred mango agribusiness destination. This background expounds the basis for the selection of the district for this study.

Statement of the Problem

The neoliberal theory primarily indicates that upgrading value chains is critical to ensuring economic diversification, technological advancement and structural transformation (Diao, 2010; Kaplan, Bettighofer, Brüntrup-Seidemann & Noltze, 2016; Yumkella et al., 2011). This theory, however, fails to predict the likely challenges that may emerge as a result of economic upgrading of production activities. The theory equally does not predict how fairly gains should be distributed among chain actors for more inclusive development. Furthermore, the theory does

not spell out how central, social and economic institutions play a role in the upgrading process. Thus, this study attempts to deal with these theoretical gaps.

The economic and social upgrading of the mango value chain appears to offer the opportunity for market-based inclusive development, as it provides opportunity for job creation and economic prosperity, especially in rural settings (Osei, 2007; Barrientos & Visser, 2012). Though some previous studies (Abdallah, 2012; Agyapong, 2013; Inkoom, 2014; Mensah & Brümmer, 2016) have investigated the mango value chain in most mango-concentrated areas such as Yilo Krobo, Tamale and North Tongo districts in Ghana, there is dearth of literature, with the exception of Ansaa (2012) and Okorley, et al. (2014), on mango value chain in the Shai-Osudoku district, which is an emerging concentrated area for mango production. Ansaa's (2012) and Okorley, et al.'s (2014) studies only focused on the post-harvest handlings, and demand and supply of mango products. They did not measure the constraints that impede producers nor centred mainly on the opportunities that producers could exploit to propel upgrading in the mango value chain.

In addition, previous studies appeared not to have focused on examining the land holding arrangements in mango production, standards and certifications of fresh mango fruit. Such investigations only reported on the preference of consumers for standard mango products and that certification is a requirement for exporting to the global market (Abu, 2010; Badar, 2014; Inkoom, 2014), but did not report clearly on the detailed requirements of the standards and certifications for mango fruits. For this reason, Abou-iiana (2016) and Kaplinsky (2010) have both promoted the redirection of attention to how mandatory standards and the

stringency of standards affect value chain performance, which has its theoretical grounds in the neoliberal theory.

Besides, studying the economic and social upgrading in the mango value chain for smallholder producers while paying attention to the marketing arrangements and governance structures along the mango value chain is important, as earlier studies measuring such characteristics have reported contradictory findings. The evaluations of Badar (2014), Honja (2014) and Mehdi, Ahmad, Yaseen, Adeel and Sayyed (2016) disclosed that the mango value chain is governed by spot-market transactions while others, including Abu (2010), Osena (2011), Abou-iiana (2016) and Okorley et al. (2014), indicate that it is governed by hierarchical governance structure. Accordingly, this study as well, seeks to contribute to the ongoing debate.

Studies on mango value chains have paid little attention to issues of institutional strategies that promote economic and social upgrading along the value chain. Nevertheless, such issues are important because they affect the performance of the mango value chain (Collins, Dent & Bonney, 2016). These institutional strategies, which prevails in the economy, play a major role in facilitating or limiting economic and social upgrading in value chain as advanced in the institutional theory (Dent et al., 2017). It is especially essential to assess how these institutional strategies affect the mango value chain performance (IIED, 2011).

Some investigations have reported on women participation and working conditions along the mango value chain (Badar, 2014; Mensah & Brümmer, 2016; Arinloye et l., 2017). However, these studies fail to indicate clearly the contract

arrangements between the producers and farm-workers, thereby underlining the significance of the present study. Thus, the researcher is motivated to examine the economic and social upgrading in the mango value chain for farmers.

Research Objectives

Generally, the research objective is to examine the economic and social upgrading by farmers in the mango value chain in Shai-Osudoku District in the Greater Accra Region of Ghana. Specifically, the study:

1. Described the nature of mango production in the district;
2. Analysed the upgrading activities in the mango value chain;
3. Ascertained the key constraints and opportunities for economic upgrading in the mango value chain;
4. Ascertained the key constraints and opportunities for social upgrading in the mango value chain; and
5. Made recommendations based on the findings.

Research Questions

For the researcher to be able to achieve the stated objectives, the following questions were:

1. What is the nature of the mango production in the district?
2. What are the upgrading activities in the mango value chain?
3. What are the key constraints and opportunities for economic upgrading in the mango value chain?

4. What are the key constraints and opportunities for social upgrading in the mango value chain?

Significance of the Study

Job creation and poverty reduction are major developmental concerns in Ghana (Ghana Statistical Service (GSS), 2015). This study, which focuses on economic and social upgrading in the mango value chain for smallholder producers is a major aspect which identifies and evaluates the socio-economic and cultural impacts of the mango commodity on the lives and circumstances of people, their families and their communities. The results from this research will, therefore, be resourceful for policy formulation towards promoting job creation and mango smallholders in markets, which will improve mango farmers' incomes. The findings will also promote access to technologies, market information, social protection measures, and research and development within the mango industry.

Furthermore, the findings of this study will inform the mango value chain actors, government and donor agencies about the constraints to tackle in order to overcome the barriers limiting the development of the mango sub-sector. In the same line, development and political researchers will find the results useful in their attempt in persuading bureaucracies to recognize and respond to the constraints affecting mango value chain development. Also, financial researchers and institutions will equally appreciate the output of this research in their process of trying to identify opportunities associated with any financial proposal by mango producers and thereby assign monetary values to such proposal, appropriately.

Finally, the findings of this research will also contribute significantly to some policy debates. These will include agricultural and employment policies. The results of this research will then serve as a baseline study for further studies on mango value chain development. Findings of this study will also assist government and policy makers in their quest to formulating policies for the achievement of the SDGs, specifically, goal two, eight and nine.

Delimitation

Thematically, this study focuses on economic and social upgrading in the mango value chain, particularly at the production level. Specifically, it encapsulates the economic and social conditions of producers and farm-workers in terms of the level of technology adaptation, working conditions, working hours and income. It also captures the end market characteristics such as market arrangements and chain governance structure. In addition, the study captures the chain specific constraints such as product and process related constraints; resource-related constraints; technological and structural related constraints and the advantageous opportunities available. Furthermore, this study encapsulates the institutional goals and strategies for the mango value chain upgrading.

Geographically, this study was undertaken in Ghana, specifically, at the Shai-Osudoku District. For the target population, the study captures the mango farmers in Shai-Osudoko District and their farmhands. Particularly, it consists of mango producers of the Dangme Mango Farmers Association (DAMFA) and its officials in the district. The study also captures the indirect actors whose activities are having a bearing on the mango value chain performance. Institutions such as

Shai Osudoku District Agricultural Department (SODAD) and Department of Horticulture, Ministry of Food and Agriculture (DHMOFA) officials.

Organisation of the Study

The study is organised in five chapters: chapter one covers the background to the study, statement of the problem, research objectives and questions of the study, the significance of the study, delimitations of the study and organisation of the thesis. Chapter two constitutes the review of related literature which covers theoretical perspectives, conceptual review, empirical review, lessons learnt and the framework of economic and social upgrading in the mango value chain.

The third chapter focuses on the methodology used for the study. Specifically, it captures introduction, the research design, study area, population, sampling procedure, data collection instruments and procedures, data processing and analysis as well as the provision of the chapter summary. Chapter four presents the results and discussions while the Chapter five centres on the summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Literature review offers a platform for researchers to refine and sharpen the problem to be examined and provide a thorough explanation of the current state of knowledge in a chosen research area (Kumar, 2011; Rowland, n.d). Both authors add that the review of related literature provides a starting point for researchers to compare, contrast, critique, connect, evaluate and identify gaps in the chosen field of study. In the same line, it provides information on theories, concepts and empirical evidence for a substantial analysis of the approaches and methodologies other investigators have employed in solving similar problems (Ridley, 2012; Yin, 2003). Furthermore, Kumar (2011) suggest that it reveals the strengths, contestations, inconsistencies, weaknesses, and contradictions in the existing literature and draws lessons to inform the design and conduct of the new study.

This chapter presents the theoretical framework guiding the study, the conceptual underpinnings, and related empirical studies. The chapter ends with a conceptual framework which serves as an embodied visualized blueprint of the study.

Theoretical Framework

Theoretical review remains one of the most important strategies for completing a research study (Yin, 2003). Neuman (2014) suggests that it provides the general knowledge and explanation of the logical consistencies and complexities in the entire research process, from the stages of topic selection, focus question, study design, data collection through to informing how data is analysed

and interpreted (Neuman, 2014). Kumar (2011) had earlier posited that it provides a set of parameters for reviewing literature in relation to the main themes pertinent to a particular research field, thereby giving a focus to the review.

This section examines the neoliberal theory and the institutional theory as the theoretical framework underpinning the research. The merger of these theories in the study will be essential because, none of these theories can autonomously explain social and economic upgrading in value chains of production networks. These theories will therefore complement each other in the explanation of the issues of interest to the study.

Neoliberal Theory

The neoliberal theory promotes individual primacy, entrepreneurship, market competitiveness, resourceful marketing, innovation, and consumerism, and the contraction of state mechanisms as the key elements driving economic upgrading along value chain networks for economic development (Harvey, 2005; Neilson, 2014; Peet, 2003; Pieterse, 2010). The usage of the term 'neoliberalism' to advance the theoretical underpinning of economic liberation, emerged during the 19th century among liberal scholars, to mediate the conflicting theoretical philosophies of socialist planning and classical liberalism (Boas & Gans-Morse, 2009; Mirowski & Plehwe, 2009).

Conversely, Jackson (2010), Burgin (2012) and Thorsen and Lie (n.d) all indicated that Clarles Gide, a French economist, is the pioneer in the usage of the term 'neoliberalism' in the 18th century. However, from a historical perspective, Ryan (1993) suggests that the fundamental foundations of neoliberalism was laid

by Adam Smith (1776), in the work "The Wealth of Nations". The central argument of Smith was that, free exchange trade along production networks is needed for a transaction to benefit parties, and to propel the specialization of activities of production for economic growth (Ryan, 1993; Smith, 1910).

Clarke (2005) added that the existence of any ceiling on trade liberalization will reduce the wellbeing of individuals along production nodes by repudiating the opportunities of these individuals to improve production activities as well as their own economic conditions (Clarke, 2005). Furthermore, Jackson (2010) suggests that market expansion through free exchange trade will permit increasing specialization and division of labour as well as improve production networks (Jackson, 2010). The argument implies that the obstructions to free trade limits specialization and division of labour and thus, affects the upgrading of value chain networks and prosperity of the individual and the nation at large.

The central tenet of the theory rests on competitive and open markets as the ideal criteria for the development of global value chains, as the keys to economic growth (Dill, 2010; Neilson, 2014). Neoliberal theorists also argue that such competitive and unregulated markets are maximally effective in generating and distributing equitably the social, economic and intellectual necessities of actors along value chains, necessitating prudent economic growth in societies (Ajei, 2007). Ajei (2007) holds the view that free and competitive market comprises rational actors who know their aspirations and the ability to contract with others in various production networks, through the marketplace mechanism to gratify such

needs. Neoliberal theorists, therefore, advance the idea of free but competitive market mechanisms to govern value chain networks for economic growth.

Similarly, Chomsky (1999) argued that based on methodological individualism, neoliberal adherents contend that value chain actors, motivated by self-interested actions along value chain networks, become the agents most competent for development (Chomsky, 1999), because the free and competitive market enables the enhancement of actors' economic status and that of their nations', holistically. In addition, Kotz (2015) suggested that neoliberal theorists maintain that market liberalism will sanction economic efficiency, income distribution and technological progress along value chain networks and that economic performance will worsen in case of state interventions (Kotz, 2015). These postulations advocate for the widespread of economic liberalization and strategies that revitalize the rights and capabilities of individuals along value chain networks in an economy.

Harvey (2005) points out that the theory places emphasis on the well-being of individuals which can best be achieved via individual freedoms and entrepreneurial skills regulated by an institutionalized framework. Harvey further opined that such institutional arrangements should promote free markets, free trades and strong private property-rights (Harvey, 2005). Similarly, Thorsen and Lie (n.d) indicated that the only purpose of the state is to safeguard the liberty of the individual. This belief usually postulates the conviction that the authority of the state must be trifling or at least reduced drastically, and that it is unacceptable for the state to be involved beyond its legitimate purpose.

Pieterse (2010) and Friedman (1980) indicated that free market mechanisms is at the heart of organising the exchanges of goods and services along value chains. Friedman (1980) argues further that the neoliberal theory assumes that a person who is capable of accessing market relevance and functioning as a competent actor along these value chains will nurture upgrading. This suggests that a well-governed relationship between the actors in production can result in upgrading or downgrading of production activities along the value chain.

The neoliberal theory has received various criticisms. For example, Fleming (2016) posits that the postulation of neoliberal theorists that the market logic is the best approach to improving economic efficiency in production networks is flawed, because value chain performances are compromised when focus of assessment is on the economic efficiency factor, where strong workers' entitlements are considered barriers to profit maximization (Fleming, 2016). Birch and Siemiatycki (2015) had earlier argued that the idea of the neoliberal economic order not only undermines the workers legitimate entitlements, but that it also nurtures structural violence, job insecurity, layoff menace and unemployment. Thus, the resultant effect of the neoliberal worldview weakens the social goods of production such as social safety nets.

Similarly, Bond and Dor (2003) assert that neoliberal policies have adversely affected many individuals through retrenchments, work degradation, increased poverty, environmental mismanagement, and households' and nationalities' production downgrading. Thus, the limitations of the neoliberal theory indicate that the theory advances the drivers of upgrading in production

networks mostly from the economic dimension without recourse to the social conditions of actors along the value chain (Sarkar et al., 2013). These weaknesses can be accounted for by the institutional theory and thereby necessitating its use as a complement.

Institutional Theory

Institutional theory contends that value chains operate within a social arena and therefore considers the social, rather than purely economic influences on value chain structure and practice (Rogers, Purdy, Safayeni & Duimering, 2007; Wu, Daniel, Hinton & Quintas, 2013). The theory postulates the idea and importance of using sustainable practices that defy economic logic to achieving cost effective production and distribution of economic benefits along production networks (Glover, Champion, Daniels & Dainty, 2013). It recognises that value chain networks are influenced by the existence and operation of institutions in their industry and/or country, where institutions include the governance mechanisms, legal system, capital markets, professional norms, and other cultural and societal practices (Hitt, Ahlstrom, Dacin, Levitas & Svobodina, 2004; Wu et al., 2013).

The theory provides a rationale which identifies and examines influences that promote legitimacy and survival of value chain management practices, including factors such as social environment, regulation and legal environment as well as economic incentives, whilst recognizing that access to resources are likewise important (Baumol, Litan & Schramm, 2009: Hirsch, 1975; Lai, Wong & Cheng, 2006). DiMaggio and Powell (1983) note that, in this theory, legitimacy refers to the adoption of sustainable practices seen by chain actors as being proper

and appropriate. Therefore, the theory places more emphasis on the social and institutional embeddedness of production and power relations between actors (Barrientos et al., 2010).

Scott (2007) also indicates that institutional theory is fundamentally concerned with how value chain actors can better secure their positions and legitimacy by conforming to the rules and norms of the institutional environment that exert conformance pressures on value chain performance. In the same vein, Rivera (2004) and Ball and Craig (2010) all indicate that institutional theory gives a theoretical lens of how changes in social values, regulations and technological advancements affect decisions regarding sustainable value chain management activities. For example, Delmas and Toffel (2004) draw on institutional theory to examine how different value chain strategies lead to the adoption of sustainable management practices that benefit all partners along the chain.

Various scholars (Meyer & Rowan, 1977; Hoffman, 1999; Scott, 1987, 2001; Zucker, 1987) maintain that one major strand of institutional theory is the suggestion that the institutions in a given context will cause value chain networks to adopt similar structures and practices and hence, over time, the chain networks will tend to become similar or isomorphic. Weber (1952) had earlier ascribed this isomorphic tendency to rationalism, bureaucracy and competition within capitalist markets, which forced similar structures and responses on actors and their chain networks. In furtherance, institutional theorists describe three forms of drivers that create isomorphism in value chain strategies, structures and processes: coercive,

normative and mimetic (DiMaggio & Powell, 1983; Lina & Sheub, 2012; Wu et al., 2013).

Coercive drivers involve those in powerful positions along the value chain such as exporters, processors, global buyers, large retailers and supermarkets who exert pressure on smaller chain actors such as producers, farm-workers and women across the value chain (Kilbourne, Beckmann & Thelen, 2002). Based on the view of Ageron, Gunasekaran and Spalanzani (2012), these coercive drivers may be through formal or informal pressures. Formal pressures arise from the need to meet both international and government regulations or requirements such as grades, standards and certifications of fresh produce (Barrientos et al., 2010). Coercive drivers may also arise from informal pressures such as local culture (Wu et al., 2013). Cattaneo et al. (2013) posit that these coercive pressures have impact on the degree of social upgrading or downgrading within a particular value chain network.

Normative drivers involve chain actors integrating new rules and legitimate practices within their own nodes along the value chain. These new rules stem from social obligations (Sarkis, Zhu & Lai, 2011). Ball and Craig (2010) had earlier found that normative pressures drive enterprises to be more environmentally aware, and argue that institutions are needed to understand new social rules such as ethical values in order to ensure decent work for social upgrading as well as responses to environmental issues. In the same vein, Amaeshi, Osuji and Nnodim, (2008) and March and Olsen (1989) indicate that normative drivers exert influence because of a social obligation to comply, rooted in social necessity or what an enterprise or a chain actor should be doing.

Mimetic isomorphic drivers, on the other hand, occur when enterprises imitate the actions of successful competitors in the industry, in an attempt to replicate the path to success (Aerts, Cormier & Magnan, 2006). This mimetic isomorphism arises from uncertainty (North, 1990; Thoenig, 2011). Based on earlier studies, DiMaggio and Powell (1983) argued that when conditions are uncertain, due, for example, to rapid technological or market change, actors along a particular value chain will manage this uncertainty by imitating what other seemingly successful or legitimate enterprises are doing. DiMaggio and Powell note that mimetic drivers can operate through a range of mechanisms, including recruiting workers from other producers, using consultants and participating in industry associations.

Institutional theorists maintain that institutions create expectations that determine legitimate actions for value chain actors (Meyer & Rowan, 1991), and also form the logic by which laws and taken-for-granted behavioural expectations appear natural and abiding (Wu et al., 2013). Therefore, institutions can define what is appropriate or legitimate (Scott, 2007), which will then affect how chain actors make decisions (Thoenig, 2011). DiMaggio & Powell (1991) note that this can provide insights into the role of different actors in the quest for sustainable economic and social upgrading in value chains.

Similarly, Westphal, Gulati and Shortell (1997) and Wolf (2011) indicate that the institutional perspective allows for the focus on the role of conformity, regulatory and social pressures in driving economic and social upgrading along

value chains. In order to contextualize the theoretical underpinnings appropriately, it is very essential to discuss some relevant concepts guiding the study.

Conceptual Review

Conceptual review is another critical section of the literature review that provides more understanding and knowledge of a given research theme (Walliman, 2011; Rowland, n.d). Yin (2003) posits that the conceptual review offers an applicable criteria for screening and selecting the variables of interest as well as defining the unit of analysis. This suggests that without such guidance, identifying the appropriate research design and data collection processes will be extremely difficult (Griffee, 2012). The essential concepts expounded include the value chain, agri-food value chain, upgrading in agri-food value chains, economic upgrading and social upgrading.

Value Chain

Collins et al. (2016) defined value chains as the collaborative, interactive systems that create and deliver products and services as well as information valued by final consumers. In the same vein, WBCSD (2011) had earlier defined value chain as the complete life-cycle that a product or service goes through, from the raw material sourcing stage to the disposal/recycling processes. Thus, it describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, transportation, delivery to final consumers, and final disposal after use (Kaplinsky & Morris, 2000). Collins et al. (2016) further opined that the flow of products, information and money in value chains is highly dependent upon the inter-relationships among actors along a

particular chain, as all transactions belong to the chains that deliver information, products or services.

Unlike traditional focus on production, the value chain concept stresses the importance of value addition at each stage from the product conceptualization to recycling after use, thereby treating production as just one of several value-adding components of the chain (Chuong, 2011; UNIDO, 2009a). In addition, UNIDO (2009a) suggests that value chain involves numerous interlinked activities performed by multiple types of firms which are located in different regions of a particular country or even several countries around the globe (UNIDO, 2009a). Therefore, chains can be restricted to local production markets as well as expanded to the competitive global market.

The term "value chain" was supposedly coined by Oliver in 1982 (Heckmann, Shorten & Engel, 2003). However, as a concept, value chain was proposed by Porter (1985) in the book "Competitive Advantage: Creating and sustaining superior performance". The author in an economic and business terms referred to value chain as a model which "disaggregates a singular firm into its strategically relevant activities in order to understand the behaviour of costs, profits and the existing and potential sources of differentiation" (Porter, 1985). Thus, disaggregating the activities through the chain, the product gains some value, because the chain of activities as a whole gives the product more added value than the sum of independent activities.

In furtherance, Gereffi (1994) identified input-output structure, territoriality, governance structure and institutional systems as the four building

blocks of the value chain approach (Gereffi, 1994). According to Karl, Baker, Negassa and Ross (2009), input-output structure refers to the primary activities in the core value chain creating direct value; such activities include inbound logistics, operations, outbound logistics, marketing and sales as well as services.

On the other hand, territoriality denotes the geographical settings within which a particular value chain activities occur (Lusby & Panlibuton, 2004). While governance structure within value chains involves the market transactions that chain partners engage in, institutional system identifies the indirect actors who provide support activities that promote value creation along the chain (Barrientos & Visser, 2012; Staritz, Reis & Gamberoni, 2013). Kaplinsky and Morris (2000) suggest that these four building blocks focus on how value is created, enhanced and captured within the global value chains.

Congruently, Gereffi (1994) and Haggblade, Theriault, Staatz, Dembele and Diallo (2012) suggested that these value chain actors operate within an institutional environment, which can either facilitate or hinder its performance. Gereffi (1994) added that rules and regulations, policies, and social norms all contribute to this institutional environment as do research and public goods such as extension and infrastructure (Gereffi, 1994) as well as business entities that provide cross-cutting services such as finance and transport.

Various scholars (Collins et al., 2016; Feller, Shunk & Callarman, 2006; Stamm & von-Drachenfels, 2011) have indicated that the idea of value chains are now expressions of unprecedented fragmentations of production processes and as such, provides a more holistic outlook of production networks. Feller et al. (2006) and

Collins et al. (2016) have asserted that the value chain has become a practical and useful explanatory framework for understanding how firms and countries are engaged in the process of value creation, enhancement and capture. Correspondingly, Stamm and von-Drachenfels (2011) note that, given the multitude of different arenas of application, a variety of closely related conceptualizations and understanding of value chains have emerged over the years, and one of such focus arenas of the application of value chains is the agri-food business.

Agri-food Value Chain

UNIDO (2009b) defined agri-food value chain as an inter-related, multifaceted system which creates and delivers products and services that consumers value. In addition, Yumkella et al. (2011) suggest that agribusiness industries operate on value chains that drive commodities and services in the fulfilment of the food requirements of final consumers. The value chain of the agribusiness sector covers different actors including input suppliers, manufacturers, small-scale producers, high-tech agro-holdings, and small and medium sized enterprises as well as multi-national corporations (KPMG International, 2013; Yumkella et al., 2011). Therefore, the concept of agri-food value chain provides the framework for tackling the social, economic, institutional, technical and marketing problems of the agricultural sector as well as the integration of the outcomes.

Agri-food value chains provide the goods and services that the consumer needs, while inducing returns for the actors along the chain (Kaplinsky, 2010). Thus, knowing the preferences of the end consumers and how to satisfy these needs is essential to improving chains' performance (Kaplinsky, 2010; Lee & Gereffi,

2014). Kaplinsky posits that if the chains of agri-food are considered collaborative systems, then performance of the actors can be improved through similar collaborations because it provides opportunities for performance improvements.

Arinloye et al. (2017) and Osena (2011) have identified that the actors along the agri-food value chain are in two distinct categories - the direct and indirect actors. The direct actors are those directly involved in agri-food production and its commercialization, and for whom the business is their major source of income (Arinloye et al., 2017). These include input suppliers, producers, harvesters, wholesalers, retailers, processors, and consumers (Osena, 2011). Indirect actors are agencies providing support-services like financial and/or capacity-building assistances to the direct actors along the value chain (Arinloye et al., 2017). These comprise credit and saving providers, extension service providers, marketing and cooperative agencies and NGOs (Arinloye et al., 2017; Osena, 2011).

A typical agri-food value chain (Figure 1) indicates that each stage of the value chain involves activities and functions that contributes to the general objective of making available the preferred agri-food products to the consumer (Badar, 2014; Honja, Geta & Mitiku, 2016).

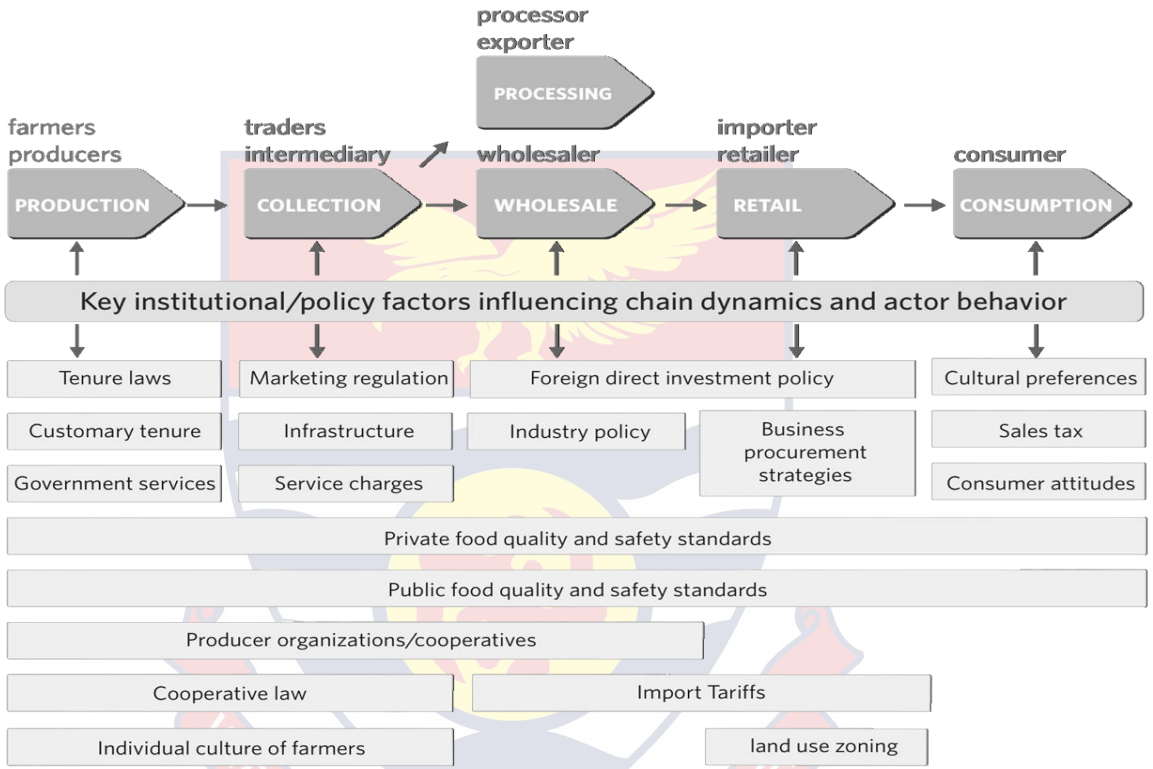

Figure 1: A Typical Agri-food Value Chain

Source: Adapted from Vermeulen, Woodhill, Proctor and Delnoye (2008)

Figure 1 shows that value chain offers a broader framework through which agribusiness functions and activities are accomplished in an interactive and complementary procedure (UNIDO, 2009a). UNIDO (2009a) added that it creates the means by which inputs are provided to agri-food producers and nexus these producers to the final-consumers through the process of financing, handling, packaging, storage, processing, transportation, distribution and marketing of these agri-food products. Aramyan, Lansink, Vorst and Kooten (2007) had earlier noted that in the value chain, indirect actors also participate in the chain's activities. These indirect actors are those who influence the chain activities and actors' behaviour externally. Among these external chain partners are public and private actors such as regulatory, marketing, financial, and advisory institutions as well as research and development institutions (Wiggins & Roepstorff, 2011).

Stamm (2004) also indicates that the external actors play a critical role in the agri-food value chain development, especially in developing economies, where direct value chain actors lack adequate financial, human, and technological resources. Correspondingly, Haggblade et al. (2012) suggested that the wider purpose and vision of these external actors is to intervene, support, and enable the divergent linkages of the value chain (Haggblade et al., 2012), and promote the development of the agribusinesses.

Upgrading in Agri-food value chains

Gereffi (1999; 2005) describes upgrading as the continuous process whereby a firm's or an economy's ability is improved towards moving into more productive, profitable and/or sophisticated capital, and skill intensive economic-

niche. Similarly, Gibbon (2001) defines upgrading as the movement into higher value-added activities in production-networks, to enhance knowledge, skills, technology assimilation, co-innovation, and to increase the profits or benefits deriving from the participation in value chain activities.

As a result, Lee and Gereffi (2014) suggest that the focus of upgrading is about countries and agri-firms adapting bottom-up approaches to improve or maintain profitable positions (Lee & Gereffi, 2014) in financial status, managerial skills, technical capacities, and competitiveness (UNIDO, 2003) in the international economy. Giuliani, Pietrobelli and Rabellotti (2005) opined that there are two dimensions of upgrading in agri-food value chains, economic and social upgrading. Therefore, upgrading affects the economic activities of production networks as well as the social entitlements of chain partners.

Economic upgrading is seen as the continuous process whereby chain actors move from low value to higher economic value activities in production networks (Pickles, Smith, Bucěk, Roukova & Begg, 2006). Barrientos, Gereffi and Rossi (2010) suggest that economic upgrading is a complex and multifaceted process, encompassing prudent changes in the structure of production, technology, market orientations, and business policies. It also includes the growth experienced in both export unit-value and export market-shares (Bernhardt & Milberg, 2011) of agri-food products. Barrientos et al. (2010) note that chain actors engaged in agri-food value chains have various opportunities such as improved value added products, enhanced productive capacity and higher profit margins for economic-upgrading

through moving into higher-value production or repositioning themselves within the agri-food chains.

Humphrey and Schmitz (2000) specify that each of the production activities represents a diversified competitive niche where economic upgrading evolves (Humphrey & Schmitz, 2000), which has divergent implications for the development of skills and employment opportunities (Amighini, 2006; Dolan, Humphrey and Harris-Pascal, 1999). Thus, within each economic upgrading process, there is a labour component, whom production activities can affect, harmonically resulting into social upgrading (Kaplinsky, 2010; Pietrobelli & Rabellotti, 2006)

Sen (1999; 2000) describes social-upgrading as the continuous process of enhancement in the entitlements and rights of workers (as social actors), and improvements in the quality of their employments such as access to decent and better work, which may be as a result of economic-upgrading. Barrientos et al. (2011) added that social upgrading includes enhancing workers' rights, protection, and their working conditions. The work of Sen (1999; 2000) projects and pivots the social dimension of upgrading in production networks, although the concept was framed by the International Labour Organisation (ILO) in 1999 (Auret et al., 2004; Barrientos et al., 2011).

ILO (1999) postulated that decent employment, social-protection, rights and standards at work, and social dialogue constituted the four pillars of social upgrading, which encourages the promotion of working under conditions of equity, freedom, security, and human dignity – in which there is protection of rights, and

provision of social coverage and adequate remuneration (ILO, 1999). Similarly, Sen (2000) and Flanagan (2005) posited that improving workers well-being will make such workers work hard, thereby boosting their productive capacities. This suggests that social upgrading involves the advancement of employment based on decent work and respect for labour standards.

In the view of Elliott and Freeman (2003), and Barrientos and Smith (2007), the four pillars: decent employment, social-protection, rights and standards at work, and social dialogue, are submerged into two broad components- enabling rights and measurable standards. Enabling rights cover 'less quantifiable' entitlements such as non-discriminations, freedom of association, and rights to collective bargaining (Barrientos & Smith, 2007; Elliott & Freeman, 2003). Barrientos and Smith (2007) also note that the lack of access of workers to 'enabling rights' emasculates their ability to negotiate for improved working-conditions.

Social upgrading might also emanate in the form of measurable standards. Measurable standards imply those outcomes of decent working conditions of workers which are framed via effective bargaining-processes (Barrientos & Kritzinger, 2004; Nathan & Sarkar, 2011; Van-Biesebrock, 2011). Nathan and Sarkar (2011) proclaim that the measurable standards cover decent working outcomes such as employment category, working hours, wage levels, social protection, unionization and gender.

Arguably, Bernhardt and Milberg (2011) make an implicit assumption that economic-upgrading will translate prudently to social-upgrading by ensuring decent working conditions and better wages. On the contrary, Milberg and Winkler

(n.d) and Sarkar, Mehta and Nathan (2013) note that there is no clear evidence to confirm that economic upgrading translates to social-upgrading, especially when employment is highly exploitative and insecure. Earlier studies (Coles & Mitchell, 2010; Oxfam International, 2004, 2009) have reported that there are negative implications such as poor working conditions, resulting from economic upgrading of production networks.

Empirical Review

Neuman (2011, 2014) posits that empirical review helps the researcher to avoid duplication and also reveals the gaps in the current knowledge. Similarly, Ridley (2012) and Rowland (n.d) note that empirical review offers the opportunity for identifying and addressing the existing limitations in the literature. This section presents an evaluation of the relevant existing studies carried out in the field of study, and ends with the lessons learnt from the review.

The presented empirical reviews are studies that centre on value chain analysis and upgrading in the mango value chain. Altogether, five empirical studies were reviewed. These are studies undertaken by Osena (2011), Badar (2014), Inkoom (2014), Honja et al. (2016) and Arinloye et al. (2017).

Osena (2011) examined the value chain of the mango fruit in Embu, Kenya. The study was guided by the modernization and the neoliberal theories. The study used a cross-sectional study design and employed mixed method approaches to collect and analyse data. Systematic sampling was used to select 176 farmers. Purposive sampling was employed in selecting six farmer processing groups and nine traders. Primary data were obtained using questionnaires and focus group

discussions, and document reviews served as source of secondary data. Osena (2011) measured variables such as age, sex, educational level, land use, mango quality, profitability, group participation, credit acquisition, extension service provision and marketing on the nominal scale. The data were analysed using descriptive analysis and SPSS Value Chain Analysis to purposively analyse the functions of the value chain actors.

The study revealed that processors are the major contributors in terms of value addition but, because of processing inefficiencies, are among the actors with the lowest profitable returns. It was also found that the processing inefficiencies are attributable to the tedious and costly nature of certification processes as well as inadequate markets for processed mango. Osena (2011) discovered that mango farmers are the lowest earners among chain actors both in terms of profitable returns and contributing to value addition. It was also revealed that the mango value chain is governed by hierarchical governance structure with wholesalers and retailers playing monopoly over market transactions by dictating produce prices. The results further indicated that the traders especially wholesalers, were the lead value chain actors, who deal with larger fruit quantities, and earn the highest profits but create less value addition compared to the processers.

The study showed that almost all actors along the value chain enjoy certain amount of profits in the peak seasons but indicated that most actors divert into the transaction of other agri-food products such as pawpaw, orange and watermelon in the lean seasons as a coping mechanism. It was also revealed that the institutional support providers included government agencies, non-governmental organisations

and financial institutions. In addition, the study uncovered that the mango industry was challenged with low fruit productivity, quality issues, and fruit wastage at the orchard level, stemming from poor management and orchard infestations by mango weevils and fruit flies. Also, high labour cost was unveiled as a major constrain.

Lastly, the study disclosed that processors and exporters were very few and hence, developed vertical coordination with specific farmers to buy from directly. Osena (2011) notes that farmers have upgraded along the chain to become retailers, while others joined some of the processing groups by selling part of their produce to these groups for processing and the rest to brokers. The study also found that economic upgrading activities at the production node included land amelioration, usage of value added seedlings and innovative production methods. The study concluded that chain integration is low, leading to poor economic upgrading along the mango value chain.

Badar (2014) examined the performance nature of the mango value chains in Pakistan, focusing on consumers' mango value preferences and constraints for the industry's sustainable development. The sustainability and neoliberal theories formed the basis for the study. The study employed case study design and used the mixed method approaches in data collection and analysis. The total sample size was 640 respondents; comprising 450 surveyed consumers, five focus group discussions (FGDs) involving 40 consumer participants, 150 in-depth interviews held with input suppliers, mango farmers, pre-harvest contractors, commission agents, wholesalers, retailers, exporters and public stakeholders.

Badar (2014) selected the consumers using convenient sampling technique, and employed simple random sampling method to select mango farmers, while purposive sampling was used to select the remaining chain participants. Primary data were gathered using survey questionnaire, in-depth interviews and observation while documents were reviewed as secondary data. The study analysed the data using descriptive analysis, thematic content analysis and cluster analysis.

The study revealed that the mango industry has a diversified and heterogeneous structure involving numerous chain partners, who are linked through three different value chains; comprising unorganised traditional value chain governed by spot-market transactions, through which low to high quality fresh mango produce are carried to end consumers of all income-groups. The modern value chain, through which better quality fresh mango produce are carried to the middle and high income-groups, and export mango produce are carried through the export value-chain to foreign consumers. The modern and export value-chains were also primarily governed by spot-market transactions. However, the study suggested that exporters and supermarkets are developing vertical-coordination by buying fresh mango produce directly from farmers.

In general, Badar (2014) concluded that profits are earned by almost all actors along the value chains. However, post-harvest losses, neglect for fruit safety, and poor performance along the export chain revealed significant gaps for economic upgrading. The study further found that even though the mango value chains generate sizeable employment, they failed to ensure the employment of women and decent working conditions for workers, which impedes social

upgrading. Badar (2014) advocated that the constraints of the sustainable development of the mango industry came not only from the weaknesses of specific tiers along the chains, but also in value-chains as a system and the inadequacy of institutional support systems. Badar (2014) recommended the promotion of effective information flow by reorganising and supporting collaborative relationships amongst chain partners and the enhancement of chain governance.

Both Osena (2011) and Badar (2014) reported that almost all value chain actors benefit from chain participation but in varying degrees. Similarly, both uncovered that upgrading along the mango value chains is still low. However, both studies did not capture the opportunities that actors could exploit to propel economic and social upgrading. Furthermore, government agencies were not included in the research of both studies, although Osena (2011) identified them as key value chain service support providers. In addition, Badar's (2014) claim that the mango value chains are governed by spot-market transactions contradicts the earlier findings of Osena (2011) that the chain is governed by hierarchical governance structure. This therefore makes the findings of the form of market governance structure along the mango value chains inconclusive.

Although both studies identified low productivity as a challenge impeding economic upgrading in the orchard node, the reportage of Osena (2011) and Badar (2014) excluded the level of technology adoption, product and process related standards and certifications. Though Badar (2014) made discovery on issues of the employment pattern of social upgrading, there is ambiguity in the findings because the workers themselves were not part of the research. Badar (2014) did not uncover

anything on mango processors, and the discovery made by Osena (2011) on issues of processors, was only on group processing. This makes the findings of Osena (2011) and Badar (2014) unclear with respect to workers' working conditions, constraints and opportunities for economic and social upgrading in the mango value chain.

Inkoom (2014) examined the extent of economic upgrading in mango production in the Yilo-Krobo municipality in the eastern region of Ghana. The underpinning theory of the study was the neoliberal theory. The study adapted a mixed method approach and a cross-sectional research design. Inkoom (2014) employed a multi-stage sampling technique to sample 62 respondents for the study. Yilo-krobo municipality was purposively selected as the first sampling stage.

Stratified sampling technique was used at the second stage to stratify producers in two groups based on registered farmer-ship and the years of production, and simple random sampling was then employed as the last sampling stage to select a sample size of 62 mango producers. Interviews, observation and focus group discussions (FGDs) aided primary data collection. The instruments employed in the study were interview schedule, interview guide, FGD guide and field observation guide. Inkoom (2014) measured variables such as farm-specific characteristics, production techniques, market information and profitability on nominal scale while input and output levels, and input cost and output price levels were measured on ratio scale. Descriptive statistics, Kendall V statistical analysis and stochastic production frontier analysis, dominated the data analyses.

The study found that producers have upgraded from the plantation of traditional mango varieties to the cultivation of more commercialized mango varieties such as Kent and Keitt. It was also found that upgrading activities at the

farming node included land amelioration, usage of value added seedlings, and innovative production techniques, meeting marketing arrangements and standard and certification requirements. The study revealed that inheritance and/or out-right purchase were the predominant means of acquiring land for mango orchards. Inkoom (2014) also found that the yield of production was highly profitable and that there is no output differences both in the peak and lean seasons of production however, the returns are affected greatly by the high cost of labour. It was also revealed that farmers sell their produce to processors, exporters and market women respectively. The study disclosed that the mango industry is male-dominated.

The study further unveiled that producers have very little or no access to credit facilities and depended on their own savings which impeded their capacity to upgrade production activities. However, the study did not provide reasons as to why producers were not having access to credit facilities. On the other hand, it was unearthed that farmers were adequately supported in areas of technical trainings from processing companies and NGOs, which facilitated their certifications and enabled them to upgrade along the chain, to being exporters. Inkoom (2014) also revealed that competitiveness among the farmers played a significant role in enhancing upgrading at the production node.

Last but not least, the major constraints impeding economic efficiency included unavailability of skilled labour, high input cost, access to productive land, access to credit, and pest and disease infestations. Therefore, it was concluded that, generally, mango production is experiencing economic downgrading, with the presence of technical-innovative and allocative inefficiencies having greater effect

on economic efficiency. As such, Inkoom (2014) recommended that there is the need for reorganising and restructuring of production activities through public-private partnership strategies to facilitate the efficient optimization of productivity for economic efficiency.

Honja et al. (2016) investigated the mango value chains in Southern Ethiopia district of Boloso Bombe Woreda, Wolaita zone, with special attention on identifying mango value chain actors, their respective functions, and the distribution of benefits among the actors. The neoliberal theory and the institutional theory underpinned the study. The study adopted both qualitative and quantitative research approaches and a cross-sectional study approach. A total of 198 respondents comprising mango producers, collectors, wholesalers, retailers, processors and consumers were sampled for the study. Simple random sampling method was employed to select the mango producers while purposive sampling was used to select the rest of the respondents.

The study used interview guide, a key informant interview guide, a focus group discussion guide and questionnaires as primary data collection instruments while secondary data included document reviews. Continuous variables such as age in years, family size, distance to the nearest market, mango production and marketing experience in years, and income from sale of other crops were measured on the ratio scale. Other variables like sex, educational status, access to extension service, access to credit, access to market information, membership in group, livelihood, farming and production systems were measured on the nominal scale.

Honja et al. (2016) analysed the data using descriptive statistics, margin analysis and Strengths, weaknesses, opportunities and threats (SWOT) analysis.

The study revealed that there is value addition along the chain, as each of the chain actors' added value to the mango product in the changing process of the product title. It was also uncovered that some actors have upgraded to performing more than one function along the chain hence, showing relative product upgrading along the chain. The study showed that the highest gainers, both in terms of market and profit margins, were the processors, followed by the farmers, and the collectors were the least gainers in terms of market margin while the least profit gainers where the wholesalers.

In addition, the study unveiled that lack of technology, low price of mango produce, perishability, limited supply of improved mango varieties, poor provision of extension service, low level of knowledge and skills, lack of credit availability, lack of farmer cooperatives, lack of information on post-harvest management and market dynamics are major constraints. Honja et al. (2016) recommended that in order to accelerate the development of the mango value chain, policy initiatives should be aimed at enhancing producers' access to technologies, innovations, market information, extension services, credit facilities and cooperative development.

Although Inkoom (2014) focused on economic efficiency which is the process upgrading component of economic upgrading, there is no clarity with regards to the omnibus pattern of economic upgrading in the production node of the mango value chain. Furthermore, discoveries were not made by both Inkoom

(2014) and Honja et al. (2016) with regards to the social dimension of upgrading. In addition, country specifics showed contrary findings with regards to the level of returns to producers, as earlier findings of Osena (2011) and Badar (2014) indicated that farmers are the least gainers along the mango value chain and latter findings of Inkoom (2014) and Honja et al. (2016) showed that mango farmers are among the highest profitable earners along the chain. This makes the findings inconclusive with regards to the earning level of farmers along the chain.

Moreover, the findings of Inkoom (2014) that producers received their adequate technical support from government agencies contradict the discoveries made earlier by Osena (2011) and Badar (2014) that actors received limited/ no technical support from government agencies. This makes it unclear whether the level of government support that chain actors receive depend on the country context.

Arinloye et al. (2017) studied the value chain development of the mango commodity for small holders in Outamba-Kilimi in Sierra Leone. The theories that underpinned the study was the neoliberal and institutional theories and it was also guided by the livelihood empowerment approach. Arinloye et al. (2017) sampled a total of 116 respondents for the study; comprising nursery farmers, producers, harvesters and assemblers, transporters, traders, consumers, non-governmental organisations and local authority representatives.

The study employed qualitative research approach and a case study design. Purposive sampling technique was used to select the chain actors based on their experience related to mango activities. Focus group discussions (FGDs) were organised using FGD guides as the conduit for data collection. The study measured

variables such as production method, mango varieties grown, material used, distribution channels, chain support services, coping strategies on nominal scale. The data were analysed using thematic analysis.

The study revealed that women were only found at the harvesting and trading nodes but were poorly represented at the farming node. The reasons disclosed were that mango production activities are seen as very tough and harsh and women are traditionally perceived as weak. The study unearthed that fresh mango produce were processed either into juice and/or dried products. However, dried mango products were processed locally at the household level, using traditional methods of processing. The study further disclosed that there were two marketing channels for mango products, the local channel, where farmers sell directly to collectors and/or consumers and the processing and export channel, which offered producers lucrative prices for mango produce.

The study concluded that the mango value chain is poorly developed and the major challenges that actors face include the lack of; inputs, appropriate harvesting tools, appropriate processing knowledge and equipment; high transportation cost and poor road network. The coping strategies developed by actors to overcome the challenges included the use of drinking water plastics as nursing materials, the use of local mango varieties, hand weeding, use of organic fertilizers, fetching water for watering the plants and seeking advice from colleague actors. Arinloye et al. (2017) recommended that tackling the constraints and optimizing the opportunities would help encourage farmers to upgrade and also cultivate more mango orchards and thus will improve the mango value chains.

Arinloye et al. (2017) and Badar (2014) discovered that women were not found at the mango production node of the value chain mainly because of cultural issues. Arinloye et al. (2017) discovered that organic mango production gains more value on the markets. However, Inkoom's (2014) findings on farmers being satisfied with both local and export market prices contradicted the earlier discoveries of Osena (2011) and Badar (2014) as well as the latter discovery by Arinloye et al., (2017) that producers are only satisfied with the export market prices because they offer more lucrative prices for mango produce. This makes it inconclusive with regards to the market price preferred by producers. Furthermore, no discovery was made by all the reviewed studies with respect to farmhands, their working conditions and working hours. Moreover, discoveries were not also made on the opportunities that can be exploited to propel social upgrading.

Table 1 shows the summary of the five empirical studies that this study has reviewed. The content of the summary includes author (s), publication year, study focused area, study location, research approach (s), study design, sampling technique (s), instruments for data collection and findings. The empirical review unearthed that there are data gaps in the existing literature on economic and social upgrading of the mango value chain. Some of the empirical gaps are shown in italics and located in the findings section in Table 1.

Table 1: Summary of Empirical Reviews

No.	Author (s)	Publication year	Study focused issue	Study location	Study population	Research approach (s)	Sampling technique (s)	Data collection instruments	Findings
1	Osena	2011	Analyzed the Mango Fruit Value Chain in Embu District, Kenya	Embu District, Kenya	Direct & indirect chain actors	Mixed method	Systematic sampling, stratified sampling & Purposive sampling	Questionnaires & focus group discussion guide	-Identified chain actors *-Marketing arrangements* *-Standards requirements in end-markets* *-Workers' working conditions*
2	Badar	2014	Value Chain Performance Improvement for Sustainable Mango Industry Development in Pakistan	Pakistan	Direct & indirect chain actors	Mixed method	Convenient sampling, simple random sampling & purposive sampling	Questionnaire, interview guide & observation guide	-Consumer preference -Reasons women not in production node *-Land holding arrangements* -Chain generates employment *-Pattern of innovation*
3	Inkoom	2014	Economic Efficiency of Mango Production	Yilo-Krobo Municipality, Eastern Region, Ghana	Mango farmers	Mixed method	Purposive sampling, stratified sampling & simple random sampling	Interview schedule & guide, focus group discussion guide and observation guide	-Identified mango varieties -Pests & diseases affecting mango -Labour cost *-Reasons for absence of credit services* *-process, functional & chain upgrading*

Source: Author's compilation (2018)

Note: Knowledge gaps are in *Italics*

Table 1 – continued

No.	Author (s)	Publication year	Study focused issue	Study location	Study population	Research approach (s)	Sampling technique (s)	Data collection instruments	Findings
4	Honja et al.	2016	Analyzed the Mango Value Chain in Wolaita Zone, Southern Ethiopia	Wolaita Zone, Southern Ethiopia	Direct chain actors	Mixed methods	Purposive sampling & simple random sampling	Interview guide, focus group discussion guide, questionnaires	-Functional upgrading -Constraints of mango production & marketing *-Constraints along the entire chain*
5	Arinloye et al.	2017	Value chain development for mango around Outamba Kilimi National Park in Sierra Leone: constraints and opportunities for smallholders.	Outamba Kilimi National Park, Sierra Leone	Direct and indirect actors	Qualitative	Purposive sampling	Focus group discussion guide	-Functions of chain actors -Gender roles along the chain -Opportunities for economic upgrading *-Opportunities for social upgrading* *-Specific market opportunities* *-Factors driving competiveness* -Actors' own copping strategies *-Programmes promoting upgrading*

Source: Author's compilation (2018)

Note: Knowledge gaps are in *Italics*

Lessons Learnt

From the various empirical reviews, it can be seen that cross-sectional study was the predominantly used study design. The cross-sectional study design was specifically employed to concentrate on mango production areas, in order to identify key value chain actors as well as the issues concerning mango value chain development within its real-life context, by taking a cross-section of mango production activities at one time. The review also revealed that qualitative and mixed methods research approaches were employed in the study of mango production, the mango value chain and upgrading. The mixed methods were mostly employed because it provided a methodology for conducting a research that involves collecting, analysing and integrating both qualitative and quantitative measures to studying a phenomenon. Hence, employing this approach in a study can produce more complete knowledge necessary to inform theory and practice.

It further emerged from the review that purposive sampling, stratified sampling and simple random sampling were the sampling methods mostly employed. The purposive sampling, generally, was used to select chain actors; the stratified sampling helped to stratify mango production areas while the simple random sampling was adopted to select mango farmers. The data collection methods the review discovered as the most employed were focus group discussions, interviews and observations. These varied methods fostered the gathering of data from the mango value chain actors, in a triangulated procedure that guaranteed rigorous data collection, as it aided in overcoming the limitations with regards to the use of one method. The instruments that most of the studies adopted for data

collection included focus group discussion guide, interview guide and schedule, questionnaire and field observation guide.

Ratio and nominal scales were used to measure key issues. Sex, educational level, profitability, techniques of production, market information, credit acquisition, extension service provision, group participation and challenges were measured using the nominal scale while measurement of issues relating to age in years, farm size, input and output levels, and income were measured on a ratio scale level.

For the quantitative analyses, the earlier studies employed distinct statistical analysis basically because of the divergent nature of issues focused on. Such distinct statistical analysis included SPSS Value Chain Analysis (SVCA), margin analysis, and stochastic production frontier analysis. However, descriptive statistics was commonly employed. Margin analysis is the most appropriate analytical method for analysing distributional benefits of actors along a business chain. Thematic analysis and cluster analysis were commonly used for qualitative analysis. These qualitative analysis are most appropriate for analysing nominal data. Kendall V statistical analysis was also employed to identify the agreement level of producers on challenges of production, which was appropriate.

Conceptual Framework of Economic and Social Upgrading in the Mango Value Chain for Farmers

The conceptual framework represents a visualized logical arrangement of relevant and related concepts that display how concepts are related and interconnected with each another in relation to the problem under study (Ridley, 2012; Neuman, 2014; Rowland, n.d).

The synergy between the study variables is created by the conceptual framework (Figure 2). From Figure 2, the nature of mango value chain has key nexuses with the upgrading activities. The linkages posit that upgrading occurs along the value chain through the market demand changes and regularity of profit levels of the mango product. Upgrading also happens based on the demands by downstream chain actors such as consumers, producers and product distributors, and upstream chain actors such as standard setters as well as factors underpinning competitiveness in both local, processing and export target markets such as investment and innovation levels. The chain governance system is to regulate these competitiveness, market arrangements, and institutional support services promoting access to market information and export niches, and also the promotion of competitive niches for the downstream actors to participate along the chain.

In the participation process, it is anticipated that actors' social conditions such as income, working conditions and so on, will also improve. However, there may be key economic and social obstacles constraining actors in the upgrading process. These obstacles limit actors' access to both demand and supply side drivers of upgrading hence, limiting competitiveness, to propelling upgrading as well as influencing actors' prevalent economic and social conditions.

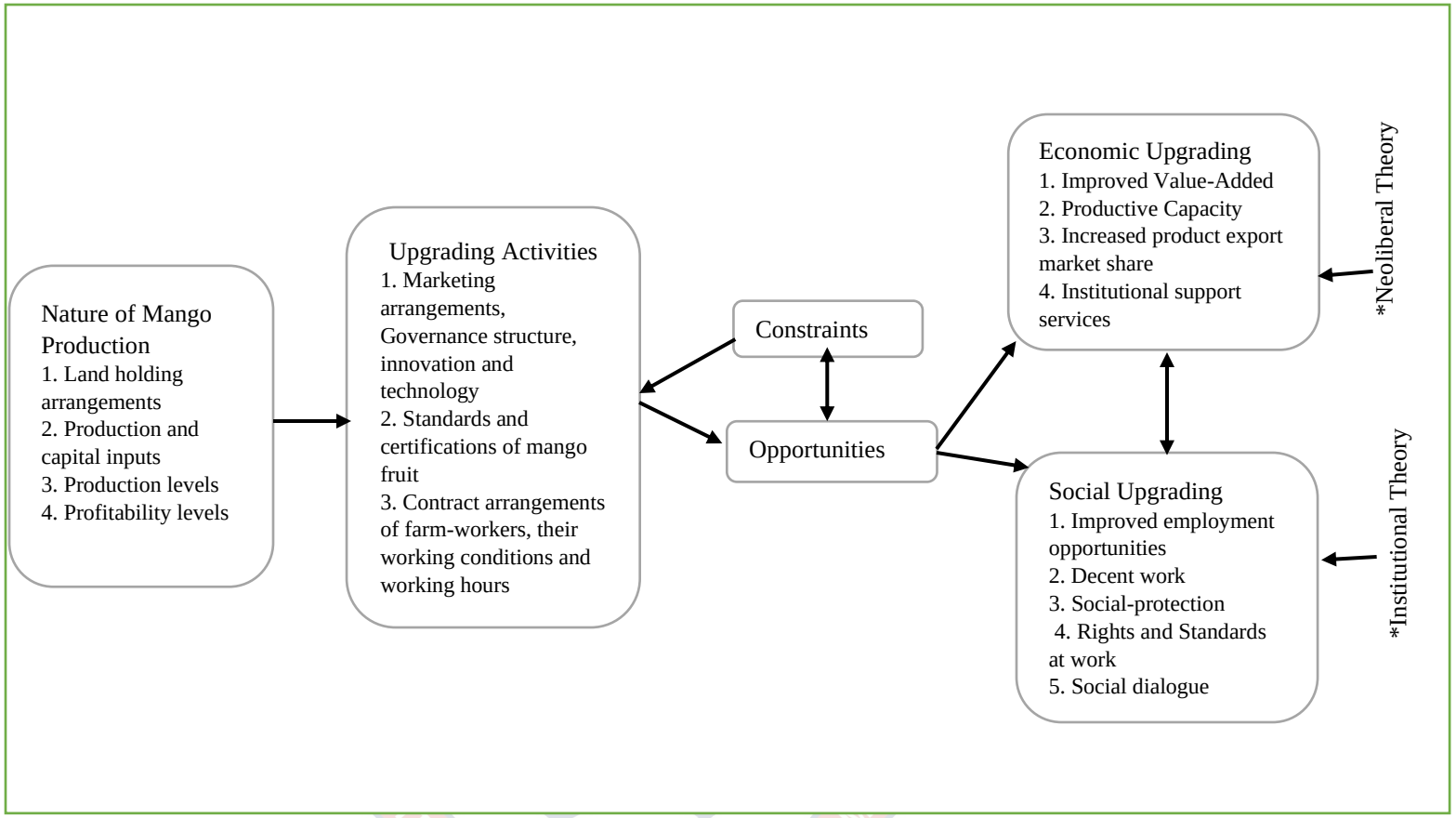

Figure 2: Economic and Social Upgrading in Value Chain

Source: Author's construct (2019) based on reviewed literature

Note: *The link between key issues and the study theories in the conceptual framework

Nonetheless, both economic and social opportunities may exist along the value chain for actors to exploit, to overcome the challenges and ensure value creation and/or addition for economic and social upgrading. In situations where the opportunities outweigh the constraints, there will be rapid economic and social upgrading.

Economic upgrading occurs when there is improved value addition and product export market shares increases while social upgrading is experienced when there is improved employment opportunities, capacity of workers' productivity increases as well as existence of decent working conditions. In addition, there should be both government and private trade strategies enabling inclusive prospects that propel economic and social upgrading along the value chain.

On the other hand, if the constraints overshadow the opportunities within the chain, there will be economic and social downgrading, where there will not be value addition in production activities but a decline in productive capacity and export market share, employment loss and poor working conditions. This can also occur when actors are not able to exploit the existing opportunities along the value chain. It may be also be due to the governance structure regulating the chain's market as well as the inefficiencies in public and private trade policies.

CHAPTER THREE

METHODOLOGY

Introduction

The research methodology constitutes the scientific pathway to finding answers to the research problems of a study (Kumar, 2011). It provides a model that presents logically the procedures to solving a particular research problem (Kothari, 2004). Sarantakos (1998) and Libguides (2018) agreed that it specifies the appropriate systematic and scientific procedures and techniques to identifying, selecting, processing, and analysing the data of a study. Thus, methodology helps in the critical evaluation of the overall reliability and validity of the study (Libguides, 2018) thereby, underlining its significance in a research process.

This chapter discusses the research design, procedures and methods the study adopted. These procedures were organised under the following key subheadings; the study area, research design, study design, study population and sampling procedures, data collection instruments, data collection procedures, data processing and analysis.

Profile of the Study Area

The Shai Osudoku District (formerly Dangme West District) in the Greater Accra Region of Ghana constitutes the study area. The Shai Osudoku District is situated in the South-eastern part of Ghana, lying between latitude 5° 45’ south and 6° 05’ North and Longitude 0° 05’ East and 0° 20’ West. The District shares boundaries with Yilo and Lower Manya districts to the northwest, North Tongu to the northeast, Akwapim North to the West, Kpone Kantamanso to the southwest,

and Ningo Prampram to the south. The Volta River washes the north-eastern portions of the district [Figure 1] ("Ghana Districts", 2018; GSS, 2014).

The District has a total land area of 1,442 square kilometres (144,201ha), with a total cultivable land of 129,600 hectares and a coastline stretch of about 37kms. The District has 22km of the Lower Volta River running through and along the Northern to Eastern boundaries (MOFA, 2012). The district has a population of 51,913, with about 76.7 percent residing in rural communities (GSS, 2014).

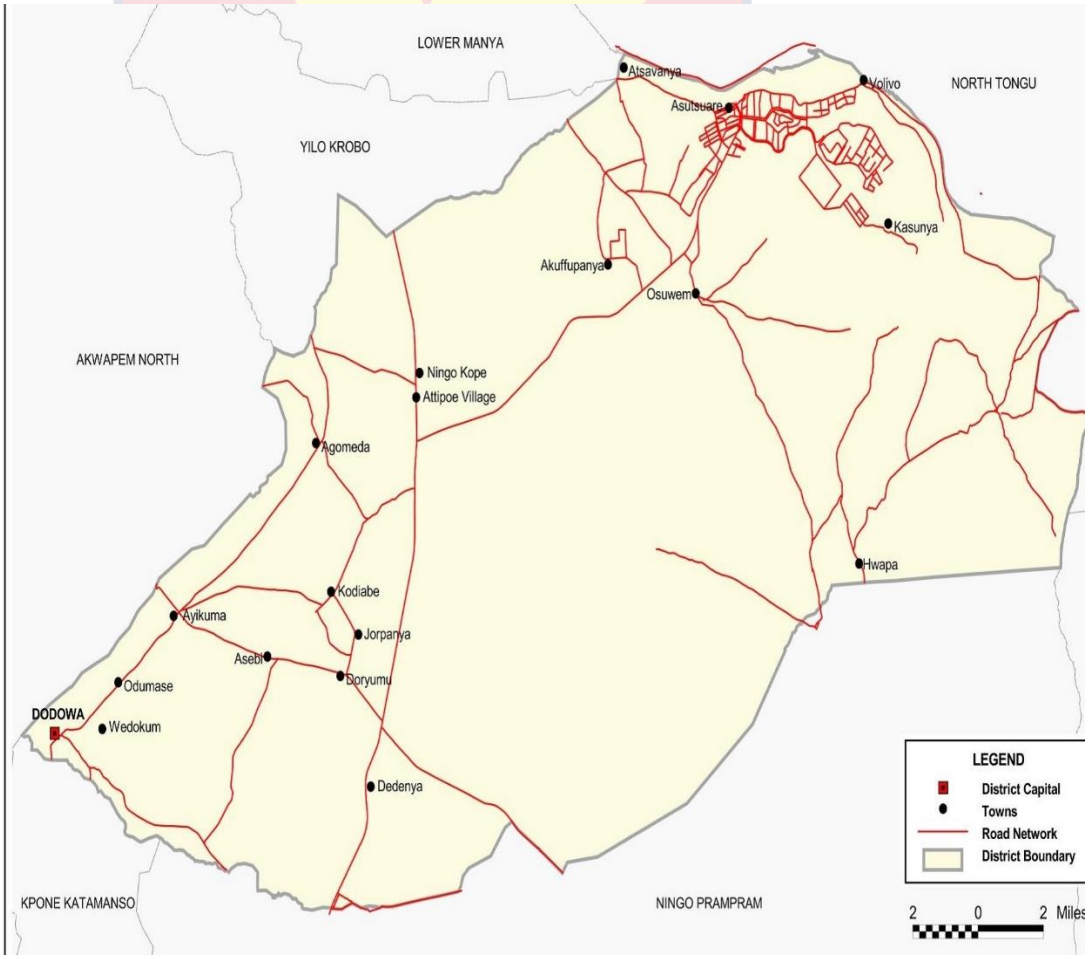

Figure 3: Map of Shai Osudoku District

Source: Adopted from GSS (2014, p. 2).

The Shai Osudoku district is characterized by a bimodal rainfall pattern (MOFA, 2012). The mean annual rainfall increases from 762.5mm on the coast to 1220mm in the north and north-east close to the Akwapim Range. The vegetation of the district is predominantly coastal savannah with a small transitional zone along the foothills of the Akwapim Range. The soil type is predominantly of the heavy Akuse series with sandy and sandy-loams in certain areas ("Ghana Districts", 2018). Agriculture is the mainstay of the district's economy, employing about 65 per cent of the population with trading being the next largest employer (Ministry of Finance and Economic Planning (MOFEP), 2016). The predominant agricultural activities undertaken are food crop production, mango plantation, livestock and fish production, fishing and fish processing (MOFEP, 2016).

Food crops production include maize, rice, cassava, okra, tomatoes, pepper, garden eggs, banana, pineapple, watermelon, pawpaw, sugarcane and exotic vegetables (GSS, 2014). Tree crops grown are primarily mangoes with a few small-scale cashew plantations in the Ningo area. Livestock production comprises cattle, sheep and goats with a large local poultry population. The District is also home to a prolific bee-keeping activity that arguably produces the best honey in the country (GSS, 2014; MOFA, 2012). MOFA (2012) indicates that about 55 percent of the estimated hectares under cultivation in the district is used for mango plantation. The Shai Osudoku District is noted as one of the major mango production areas in Ghana with two major mango seasons (MOFA, 2014). Mango as the major tree crop cultivated in the district has both economic and ecological potentials (GSS, 2014).

Small, medium and large scale mango plantation farms have become very important income-generating activity in the Shai Osudoko district. As a result, the mango farmers in collaboration with Ministry of Food and Agriculture (MOFA) formed a registered mango farmers association, Dangme West Mango Farmers Association [DAMFA] (MOFA, 2014). The major areas mango production is centred are Agomeda, Dodowa, Adumaya, Kongo and Ayikuma (Okorley et al., 2014). The district has benefited from various interventions by MOFA in collaboration with institutions and donor agencies such as the Millennium Development Authority (MiDA), Ghana Export Promotion Authority (GEPA) and World Vision Ghana (MOFEP, 2016).

From the MiDA-funded initiative, a pack-house was built in Agomeda for the mango farmers (MOFA, 2012). According to MOFA (2012), by virtue of the district's strategic location, that is the nearness to urban Accra and Tema which have the airport and sea port respectively and the Volta Lake Transport System that links the South to the North, it has the potential to be converted into a preferred mango agribusiness destination.

Research Design

Philosophical perspectives remain instrumental in influencing social science researches (Creswell, 2009; Sarantakos, 1998). Chilisa and Kawulich (2015) and Sarantakos (1998) indicate that the main philosophical worldviews influencing social science researches are positivism, interpretivism and pragmatism. These paradigms serve as the basis for guiding the ontology,

epistemology, methodology and methods of the researcher in the research process. This suggests that they are the drivers of the social science research process.

Positivist perspective is a philosophical thought that maintains the idea of rhetorical-neutrality and objectivity (Johnson & Onwuegbuzie, 2004) in conducting research. Ontologically, positivists assume that there is objective reality which is recognisable within the usage of scientific approaches (Bhattacherjee, 2012). Verifiable measurement and precise observation serves the basis for knowledge acquisition within positivist epistemology (Ary, Jacobs & Sorensen, 2010). In positivist methodology, mainly quantitative research design is adopted through employing experimental, correlational, survey or causal comparative study designs (Bhattacherjee, 2012). In the positivist paradigm, interview schedules, questionnaires, tests, experiments and observations serve as methods for data gathering (Chilisa, & Kawulich, 2015).

Positivists analyse data mainly in descriptive and inferential statistics – using both parametric and non-parametric methods (Rolfe, n.d; Scotland, 2012). Advantages of positivism include the prospect to predict or test the strength of the relationship between variables and produce findings that are generalisable, replicable and verifiable. It also facilitates the confirmation or disconfirmation of previous empirical results and axiology for value-free findings (Bogdan & Biklen, 2003; Chilisa & Kawulich, 2015). The failure to ascertain the deeper meanings and explanations of social reality and how social actions are shaped and maintained is a major limitation of the positivist paradigm (Rahman, 2017).

In opposition, the interpretivist paradigm maintains a relativist ontological position, where reality is created individually and differs from an individual to another (Johnson & Onwuegbuzie, 2004; Patel, 2015; Scotland, 2012) resulting in the existence of multiple realities. Subjectivism, founded on real world phenomenon where knowledge is socially constructed through human experiences, underpins the epistemology of the interpretivists (Chilisa & Kawulich, 2015; Ponterotto, 2005). Methodologically, interpretivists espouse a qualitative purist approach and adopt study designs such as phenomenology, case studies, ethnography, hermeneutics and feminist standpoints inquiries to studying social phenomena (Creswell, 2009; Patel, 2015; Yin, 2003).

The methods interpretivists mainly employ to gather data include interviews, documents, informal conversations, focus group discussions, observations, drawings, visual aids, artefacts and photographs (Chilisa, 2012; Willis, 2007). Some of the merits of the interpretivist paradigm include the ability to give a detail and holistic understanding of a social phenomenon. It also gives flexibility in analysing thoroughly and appropriately an issue in a given context (Matthews & Ross, 2010; Maxwell, 2012; Flick, 2011). The obvious demerits of this paradigm encompass the limited locus for generalisability, and the inability to uphold full objectivity (Rahman, 2017; Silverman, 2010).

On the other hand, in the pragmatist worldview, knowledge claims arise out of the outcomes of research – the actions, situations and/or consequences of inquiry rather than antecedent circumstances (Creswell, 2007). Johnson and Onwuegbuzie (2004) and Creswell (2007) indicate that the pragmatist paradigm is not committed

to any one philosophical system and reality. In the pragmatist worldview, truth is considered as what works at a particular time. Therefore, pragmatists reject any form of traditional philosophical dualisms (Johnson & Onwuegbuzie, 2004; Zachariadis, Scott, & Barrett, 2010). In this philosophical outlook, research is conducted using the mixed methods approach thus, allowing researchers to spontaneously draw from both qualitative and quantitative assumptions (Yin, 2003; Zachariadis et al, 2010).

Investigators within the pragmatic orientation have the freedom to adopt multiple methods, procedures and techniques of inquiry that address appropriately, the issues of concern in a study (Creswell, 2013). Thus, the pragmatic standpoint opens a door for methodological pluralism. This philosophical orientation permits the use of statistical approaches that endorse the generalisation of findings as well as non-statistical approaches in data analysis (Creswell, 2013; Johnson & Onwuegbuzie, 2004; Yin, 2003).

Considering the three philosophical perspectives – positivism, interpretivism and pragmatism, this study seems to situate more with the standpoints of pragmatism because the current study's focus was on issues of mango value chain (MVC), economic and social upgrading of MVC, and, more importantly, the constraints and opportunities for economic and social upgrading in the MVC which encapsulates the collection of both qualitative and quantitative data concurrently. Regarding the concerned issues, the propositions of the pragmatic worldview will open the accurate door to address satisfactorily, the key issues in the study. This philosophical paradigm is also vital for the study because some of

the earlier related empirical studies adopted it. On that account, this study therefore embraces the pragmatic standpoint as the philosophical paradigm that guides this study.

This current study embraced the mixed methods research strategy. Mixed methods employ strategies of inquiry that combines both quantitative and qualitative research assumptions (Creswell & Clark, 2017). This approach allows researchers to use divergent strategies to answering research questions rather than restricting the choice of strategies (Creswell, 2009; Johnson & Onwuegbuzie, 2004). This study uses the concurrent mixed methods type because it allows the combination of qualitative and quantitative data, simultaneously, in order to provide comprehensive analysis of the research problems (Creswell & Clark, 2017). However, this study inclines more towards the quantitative approach.

This study adopted the concurrent mixed methods because all the four research objectives mainly involve the collection of some level of qualitative and/or quantitative data. However, objectives one and two largely were quantitative in outlook while objective three and four primarily were qualitative in nature. Additionally, the study adopted this strategy because it permitted the blending of methods that surely improved the reliability and validity of the data and their analysis (Edmonds & Kennedy, 2017). Furthermore, several earlier studies (Badar, 2014, Honja, Geta & Mitiku, 2016; Inkoom, 2014; Osena, 2011) on related issues employed mixed methods as their research strategy and this serves as a motivation for embracing this strategy in this current study. Lastly, the mixed methods strategy was appropriate for this study because it allowed the use of both statistical and non-statistical approaches of analysis concurrently.

Study Design

With regards to the study design, because of the unique situation of this study, the study aligns more to the cross-sectional study design, although the preponderant study design from the reviewed empirical studies was the case study design. This study used the cross-sectional study design because of the type of research questions posed and the degree of focus on the contemporary as opposed to longitudinal or historical events (Neuman, 2014). The study particularly employed cross-sectional study design because most of the research objectives focus on answering 'what' questions. Yin (2003) asserts that cross-sectional research is the prevalent study design for such research questions.

According to Kumar (2011), the cross-sectional study design is most appropriate for studies that aim at finding out the prevalence of a phenomenon, situation, problem, opportunity, attitude or issue, by taking data from participants at one point. The objectives of the study informed the choice of the cross-sectional study design. The study examined the economic and social upgrading in the mango value chain for smallholder producers at a particular point in time. In addition, previous researchers (Osena, 2011; Inkoom, 2014, Honja et al., 2016) employed the cross-sectional study design in investigating related issues, which serves as an impetus for embracing such study design. Furthermore, this study design is useful in obtaining an overall 'picture' as it stands at the time of the study (Creswell, 2013).

In a cross-sectional study design, the investigator identifies the study population, selects a sample and contact the respondents to find out thorough,

holistic and in-depth information required (Kumar, 2011). Kumar notes that a study is cross-sectional with regards to both the study population and the time of investigation. According to Visser, Krosinick and Lavrakas (n.d), the cross-sectional study design provides an overview and in-depth understanding of a phenomenon at a single point in time from a specified population of interest. Hence, the study obtained data concerning the current status of mango value chain, as it pertains to economic and social upgrading for smallholder producers. Alternative categories to the cross-sectional study design include the longitudinal and panel study designs (Neuman, 2014).

Study Population and Sampling

The study population includes mango producers in Shai Osudoko District, their farm-workers, Shai Osudoku District Agricultural Department (SODAD) and Department of Horticulture, Ministry of Food and Agriculture (DHMOFA) officials. Particularly, it consists of mango producers of the Dangme West Mango Farmers Association (DAMFA) and its officials. For mango producers, the total population of the registered producers is 133 who are identified across the four major production areas: Agomeda, Shai-hills, Kongo and Ayikuma (Ghana Districts, 2018). The study population also includes farm-workers of the registered mango producers. The producers independently hire their own farmworkers hence, each producer has his/her own employed farm-worker (s) (Okorley et al., 2014).

The representatives from SODAD and DHMOFA include the district crops officer and the head of DHMOFA respectively. Samples for the study was from the

identified categories of population. Unvaryingly, the data for the study was from those that form part of the sample.

The population was relatively small (133) so a census approach was deemed feasible. The study solicited data from a focus group comprised of the executives of the association. The study used group discussions to gather data from the farm-workers. Four worker groups were formed based on the four major production zones in the district. Information such as contract arrangement, working condition and working hours were collected from this category of respondents in order to ensure validity of the data that were gathered from their employers- the mango producers. Purposive sampling was employed to select the district crops officer and the head of DHMOFA because they had sufficient knowledge about the operations around the mango commodity as well as the strategies initiated by government and donor agencies for the promotion of economic and social upgrading in the mango value chain. This category of respondents formed the key informants.

Data Collection

Data for the study was collected on issues such as the production information, chain-specific constraints that impede producers and chain-specific opportunities that producers could exploit to propel economic and social upgrading in the mango value chain. The study also collected data on upgrading activities such as grades, standards and certifications of mango products innovation, and end-market characteristics. Other upgrading activities considered were mango value chain governance structure; contract arrangements of farm-workers, their working

conditions and working hours and initiated strategies promoting economic and social upgrading. Both primary and secondary data were collected.

Primary data were on the production information, constraints and opportunities of upgrading, and upgrading activities. Primary data of upgrading activities were on grades, standards and certifications of mango products, innovation and mango value chain governance structure. Other upgrading activities captured were contract arrangements of farm-workers, their working conditions and working hours. The secondary data were on strategies promoting economic and social upgrading. The study collected both qualitative and quantitative data (Table 2). Table 2 contains the sources of data, methods and instruments that were employed for data collection.

Table 2: Summary of Methodology

Specific Objective	Type of Data	Variable	Measurement Scale	Type of Data	Source	Methods	Instrument	Analytical Method
1. Describe the nature of mango value chain	Quantitative Qualitative	Age structure, Farm size, educational level, mango varieties, planting techniques land holding arrangements in mango production production information	Ratio and Nominal	Primary	Mango farmers, Officials of DAMFA, District mango extension officer and the head of DHMOFA	Interview and Focus Group Discussion	Interview schedule, interview guide and Focus Group Discussion guide	Frequencies, Percentages, means, standard deviations, Cross-Tabulations Margin analysis, ANOVA, independent t-test Thematic Analysis
2. Analyse the upgrading activities in the mango value chain	Quantitative Qualitative	marketing arrangements mango value chain governance structure, grades, standards and certifications of mango fruit; contract arrangements of farm workers and their working conditions Working hours	Nominal Ratio	Primary	Mango farmers, Farm-workers, Officials of DAMFA, District mango extension officer and the head of DHMOFA	Interview, Focus Group Discussion and Observation	Interview schedule, Interview guide, Focus Group Discussion guide and Observation guide	Frequencies, Percentages, means, standard deviations, Cross-Tabulations, Chi-square Thematic Analysis

Source: Author's Construct (2018)

Table 2: continued.

Specific Objective	Type of Data	Variable	Measurement Scale	Type of Data	Source	Methods	Instrument	Analytical Method
3. Ascertain the constraints and opportunities for economic upgrading in the mango value chain	Qualitative	Key constraints of economic upgrading and key opportunities for economic upgrading Strategies promoting economic upgrading	Nominal	Primary Secondary	Mango farmers, Officials of DAMFA, District crops officer and the head of DHMOFA	Interview, Observation Focus Group Discussion Documentary analysis	Interview schedule, interview guide, Focus Group Discussion guide and Observation guide Reports from DHMOFA and SODAD	Thematic Analysis
4. Ascertain the constraints and opportunities for social upgrading in the mango value chain	Qualitative	Key constraints of social upgrading and key opportunities for social upgrading Strategies for promoting social upgrading	Nominal	Primary Secondary	Mango producers, Officials of DAMFA, District crops officer and the head of DHMOFA	Interview, Focus Group Discussion and Observation Documentary analysis	Interview guide, Focus Group Discussion guide and Observation guide Reports from DHMOFA and SODAD	Thematic Analysis

Source: Author's Construct (2018)

Instruments' Design

This section focuses on the design of the instruments that the study employed in the collection of primary data. The instruments that were employed for the data collection include interview schedule, interview guide, group discussion guide, focus group discussion guide and observation guide. The specifics of the design of these instruments are in the succeeding paragraphs.

Interview schedule (Appendix A) aided in the collection of data from the mango producers. The justification for employing this instrument is that it offers an opportunity to observe respondents' non-verbal behaviours, ensures comprehensiveness and aids the collection of holistic information. In addition, earlier studies (Inkoom, 2014) investigating related issues employed such instrument to collect data. The interview schedule was for the mango farmers and was constructed according to the four objectives of the study. The interview schedule had five sections containing both closed and open-ended items (Appendix A). The measurement of variables was based on the nominal and ratio scales. Section one captures demographic characteristics of the respondents such as name, age, educational level, household size and occupation.

Section two captures the first objective, the nature of the mango value chain. Issues that were captured include, land holding arrangements in mango production, mango varieties, planting techniques, the farm sizes, operational expenses, quantity produce, produce price and profitability. The next section which is objective two, analysed the upgrading activities in the mango value chain, it covered the marketing arrangements and the governance structure, innovation, grades, standards and

certifications of mango fruit, farmers' contract arrangements with farm-workers and working conditions.

The fourth section, objective three, captures the key constraints of economic upgrading. Particularly, it concentrates on product and process-related constraints, resource-related constraints and structural and technological constraints. The section also covers the key opportunities for economic upgrading. Objective four, which is the fifth section, encapsulates key constraints of social upgrading and key opportunities for social upgrading. The researcher developed the interview schedule.

The study also employed a discussion guide. The discussion guide (Appendix B) was used in collecting data from the farm-workers. Particularly, the discussion centred on objective two, the upgrading activities in the mango value chain. Specific issues entail the farm-workers' contract arrangements with the farmers, their working conditions and working hours.

An interview guide was also used. The interview guide (Appendix D) was employed for the key informant interviews. The interview guide was for the key informants and was also designed according to the four objectives of the study. Therefore, the interview guide cover issues of grades, standards and certifications of mango fruit, strategies promoting economic and social upgrading. The key informants, comprising the district crops officer and the head of DHMOFA, responded to this instrument.

The study also employed an observation guide (Appendix C) to collect data from the mango farmers and farm-workers. Specific issues that were observed were

farm-workers working conditions, product and product-related constraints, resource-related constraints and structural and technological constraints.

A Focus Group Discussion (FGD) guide (Appendix E) was also adopted in soliciting data from a focus group, comprising the main officials of DAMFA. It was made up of the chairman, vice chair, general secretary, financial secretary, treasure, organiser and protocol officer. According to Kumar (2011), focus group should have a minimum of five people and a maximum of 12. Therefore, the seven officials responded to the invitation and took part in the discussion. The FGD guide also contained themes based on the objectives. The FGD meeting was moderated and facilitated by the research coordinators. The data from the focus group discussion aided in validating the data that were collected from the mango producers. Besides, this instrument was relevant because it served the purpose of triangulation of findings.

Pre-Testing

The pre-testing of the interview schedule occurred in the Yilo Krobo district. The choice of Yilo Krobo district for the pre-test was informed by the fact that the actual study was conducted in a similar mango production district. The interview schedule was administered to five mango producers. The purpose of the pre-testing of the instrument was to determine its appropriateness. In addition, this instrument was pre-tested to ensure face, construct and content validity. The pre-testing assisted in the identification of ambiguities and weaknesses in the instrument which helped in restructuring some of the issues.

First, a weakness was identified in the construction of the items on how producers finance their mango production as some chose more than one option while the guide restricted them to one response choice. In addition, some producers added other options which were not captured previously. As a result, this item was changed and made open response after the pretesting. Similarly, the issue of support services was initially one response choice however, it was realized that producers chose more than one option. As such, before the actual administration of the instrument in the study area, question on the support services producers receive was corrected and made open response.

Ethical Procedures

The study was conducted in conformity with ethical codes in social science research. According to Sieber (1998), Sarantakos (2005), Punch (2005) and Creswell (2013), the ethical considerations include ensuring informed consent, voluntary participation, causing no harm, privacy, anonymity and confidentiality of the respondents' data. Ethical clearance was obtained from the Institutional Review Board (IRB) of the University of Cape Coast (UCC) before the actual field work. The researcher sought the informed consent of the respondents. Before beginning each of the interviews or the focus group discussion, a statement relating to informed consent was made available, requesting the respondents' consent. However, for expert interviews, a letter of consent was used to seek the informed consent of the key informants.

All the respondents were assured that their rights will be protected if they agree to participate in the study and that partaking in the study is voluntary. The purpose of the study and procedure of the research was made known to the respondents. All respondents were informed that this research will not in any way be harmful to them. The researcher used codes and pseudo names to ensure identity and anonymity or privacy of participants. The respondents were assured of confidentiality of data provided as they were for academic purposes only.

Actual Field work

The collection of data for this study was from the 2nd of March to the 4th of April 2019. This suggests that the data collection process lasted for 4 weeks and four days. I personally participated in conducting the interviews and the focus group discussion but contracted five people to assist in conducting the interviews of the mango producers and the farm-workers. They also assisted in conducting the focus group discussion.

The research assistants who were chosen were natives of the district and are those who are well informed about issues around mango production. This helped in addressing issues of language barriers. In addition to their knowledge on issues of mango production, I educated them on the items on the interview schedule, group discussion guide and the focus group discussion guide and also on ethical behaviours in research. The training lasted for a day. The collection of Mango producers and farm-worker based data was from 3th of March to the 31th of March.

For the focus group discussion, I facilitated the focus group discussion. This, was conducted on the 1st of April. The remaining three days were used for the

expert interviews, 2nd and 4th April. I personally conducted those interviews sequentially after the focus group discussion. Table 3 shows the summary of the activities of the entire field work.

Table 3: Summary of Actual Data Collection Processes

No.	Activity	Duration of activity	Date	Implementer(s)	Location
1.	Training of Research assistants on the items on the interview guide, focus group discussion guide and ethical responsibility	1 Day	2/03/2019	Researcher	Shai Osudoku
2.	Mango farmer and farm-worker based interviews	29 Days	03/03/2019 – 31/03/2019	Researcher and Research Assistances	Shai Osudoku
3.	Focus group discussion	1 Day	01/04/2019	Researcher and Research Assistances	Shai Osudoku
4.	Expert Interviews	3 Days	02/04/2019 – 04/04/2019	Researcher	Office of Experts

Source: Author's Construction (2019).

Data Processing and Analysis

The data the researcher collected were both quantitative and qualitative data and therefore require both quantitative and qualitative analyses. The quantitative data were edited, coded, inputted into the Statistical Product and Service Solutions (SPSS) version 21 and cleaned before analyses were undertaken. These analyses encompassed the use of statistical techniques such as descriptive statistics and chi-square test of independence, ANOVA, independent sample t-test, and also margin analysis. The presentation of the quantitative results was in tables and figures. On the other hand, the qualitative data analysis was by a manual process employing the thematic analysis. The presentation of the qualitative results took the form of texts, tables and plates. There was an integration of both the quantitative and qualitative analyses under each of the objectives to give a clearer and general picture of issues being analysed.

Descriptive statistics, Chi-square test of independence, ANOVA, independent sample t-test, thematic analysis and margin analysis were employed for describing the nature of the mango value chain for smallholder producers, objective one. Objective two was analysed primarily using descriptive statistics, chi-square test of independence, thematic analysis and documentary review. Descriptive statistics and thematic analysis were employed in analysing objective three. Finally, objective four was also analysed using descriptive statistics, thematic analysis and documentary review.

Operational expenses, orchard size, input and output levels and profitability were analysed on the ratio scale while land holding arrangement, mango varieties,

planting techniques certifications and quality standards, market shares of mango produce, market governance, export market access, storage facility access, means of transport, upgrading activities and employment were examined on nominal scale. The ratio scale data on profitability was further analysed using the margin analysis while the nominal scale data also involved frequencies, percentages, cross-tabulations and Chi-square test of independence. The Chi-square test of independence, ANOVA and independent t-test were at 0.05 alpha level. Data from the focus group discussants and the key informants were analysed using thematic analysis. The approach adopted in the study of documents focused on the identification of standards and certifications as well as providing their details.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter is dedicated to finding answers to the objectives of the study. After presenting the background characteristics of respondents, the results and discussion of the study are organised under the four research objectives and the corresponding questions they addressed. The first section deals with the background characteristics of respondents. The second section describes the nature of mango production. The third section discusses the upgrading activities in the mango value chain. The fourth section ascertains the constraints and opportunities for economic upgrading in the mango value chain. The fifth section, also, ascertains the constraints and opportunities for social upgrading in the mango value chain.

The first and second objectives had their theoretical underpinning dependent on the assumptions of the neoliberal theory. The neoliberal theory posits that upgrading in value chains is vital to ensuring inclusive economic growth and the success of which depends on the prospects of a particular product such as mango, technological and innovative capabilities and/or market niches (Barrientos et al., 2012). These tenets, particularly, at the production stage, focus on activities relating to land amelioration, usage of value added seedlings, innovative production methods and techniques, meeting standard and certification requirements and marketing arrangements (Arinloye et al., 2017).

The third and fourth objectives, on the other hand, were theoretically grounded within the frameworks of the institutional theory. This theory maintains

that certain economic, social and political systems should produce circumstances that uplift the prospects of all value chain actors and ensure the promotion of fairly distributional gains from economic upgrading (ILO, 1999). These tenets advocate for skills training, better contract arrangements, availability of social protection schemes such as medical insurance, protective cloths and active labour market programmes and the identification of chain-specific constraints and the exploitation of chain-specific prospects (Dent et al., 2017). In discussing the results, due reference has been made to the relevant literature reviewed in chapter two and the conceptual framework (Figure 2) that guided the study. In all, 133 producers responded to the research questions.

Background Characteristics of Respondents

This sub-section summarizes the background characteristics of respondents. The demographic characteristics examined were production zone, sex, age, marital status, educational background, main occupation and other occupation of respondents. The significance of presenting the demographics of the respondents is in three folds. First, it establishes the context within which the responses were elicited, in terms of the differences in the respondents' production zone, sex, age, and educational status. Secondly, it forms some basis for disaggregating the responses, since lumping the results together can lead to negligence of pertinent concerns that can be found within the different demographic groupings. Thirdly, from literature, these variables have been found to influence peoples' interest in mango production (Mensah & Brummer, 2016).

The first background characteristic considered was production zone. The study revealed that there are currently four major production zones in the Shai-Osudoko district. These are the Agomeda zone, Ayikuma zone, Shai-Hills and Kongo zone. Out of the 133 respondents, 67 mango producers were found in the Agomeda zone, 55 producers in the Ayikuma zone, and seven producers in the Shai-Hills while the remaining four producers had their farms in the Shai-Hills production zone. This distribution is due to land availability and its allocation for mango production. In the view of Mensah and Brümmer (2016), the availability and allocation of more area of land for mango production is paramount to deriving the interest of mango producers to such areas.

From the focus group discussion (FGD), it was realized that the production zones in the district were five, namely, Dodowa, Agomeda, Ayikuma, Shai-Hills and Kongo production zones respectively. However, the association was compelled to cancel the Dodowa zone because of estate development encroachment. It was observed that the Agomeda zone is having the highest mango producers because of the availability of land, as the zone is at the outskirts of the district and estate development has not catch up with that area. Notwithstanding that the producers were concerned about the encroachment of their lands in the near future. Sex and age have been found to influence peoples' interest in mango production.

Sex allotment of the respondents were also examined in the study. The sex distribution of the 133 respondents indicates that more males (87%) were into mango production, as compared to female (13%). This demographic observation reflects the earlier empirical findings of Asihene (2012), Badar (2014), Inkoom

(2014), Okorley et al. (2014), Mensah and Brümmer (2016) and Arinloye et al. (2017) that fewer women are into mango production because of land inaccessibility and mango activities perceived as strenuous and difficult and requires muscular strength as well as women seen societally as being muscularly weak.

Another demographic feature of the respondents the study examined was age (Table 4). The results on age show that the minimum age of the respondents was 21 years while the maximum was 75 years with a median age of 50 years (Mean = 49.62; std. dv. = 10.21; skewness = -.152) with an associated quartile deviation of 7.25. Thus, this finding seems to be corroborated by Asihene's (2012), Inkoom's (2014) and Honja et al.'s (2016) assertion that the likelihood of a farmer adopting mango production business depends on age, determination to produce and marketability, as the mango trees take a longer time to mature.

Table 4: Age Distribution of Respondents by Production Zones

Zones	Min	Max	Mean	Median	Mode	Std. Dv.	Skewness	
							Stat	Std Error
Agomeda	31	70	46.85	48.00	31.00	10.31	.006	.293
Ayikuma	21	74	51.82	51.00	49.00	9.39	-.372	.322
Shai-hill	49	54	51.25	51.00	49.00	2.22	.482	1.01
Kongo	41	75	58.00	60.00	41.00	11.14	-.064	.794
General	21	75	49.62	50.00	49.00	10.21	-.152	.210

Source: Field Survey, Khiddir (2019)

Table 5 presents the educational status of respondents. The minimum educational qualification of respondents is no formal education and the maximum,

tertiary education. The results show that, overall, 4.5 percent of the respondents had no formal education, which suggested that 95.5 percent of the respondents had attained some form of formal education. This shows that majority of the mango producers in the respective district were literate and thus are more appreciative of and responsive to new production opportunities. This is because the literate producers tend to be more receptive and adoptive to new innovations and technologies especially when it affects and concerns the improvement of production and productivity (Asihene, 2012; Gereffi, 1994).

Table 5: Educational Status of Respondents

Educational Level	Frequency	Percent
No formal education	6	4.5
Primary	10	7.5
JSS/Middle School Leaving Certificate	32	24.1
SSS/Technical education	43	32.3
Tertiary	42	31.6
Total	133	100

Source: Field Survey, Khiddir (2019)

The results also portray that a higher percentage (32.3%) of the respondents had SSS/Technical education as their highest level of educational achievement, followed by tertiary education (31.6%). A few of the respondents (7.5%) had attained primary education. The findings further indicated that the median educational level of respondents is 4.00 (Mean = 3.79; std. deviation = 1.11; skewness = -.73) and a quartile deviation of one.

There was, also, an analysis of both the main and other occupational diversifications of the respondents (Appendix F). Largely, 42.9 percent of the

respondents were full-time mango producers, indicating that 57.1 percent of the respondents were engaged in other economic avenues and thus, were part-time mango producers. This finding suggests that most of the mango producers are not actively engaged in the farming themselves. This explains the reason why most of the mango producers are having some form of educational attainment.

The results also indicated that 21.8 percent were public servants who are engaged in mango production (see Appendix F). This category of respondents included accountants, lecturers, lawyers, pastors, military personnel and those in government ministries and departments. About 18.8 percent of the respondents were traders/artisans and are also engaged in mango production. Auto mechanics, welders, motor dealers, electricians, track drivers and vendor operators were classified under the trading/artisans category. A few number of the respondents (10.5%) were employed under the private corporate entities and are also part-time mango producers. Having analysed the background characteristics of the respondents, the research questions were examined in the sequence they occur. The results and the implications are discussed in the subsequent sections of the chapter.

Nature of Mango Production

The first objective of the study was to describe the nature of the mango value chain for smallholder producers. From the conceptual framework (Figure 2), the nature of mango value chain has key nexuses with the upgrading activities. The issues covered include land holding arrangements, orchard size, mango varieties, planting techniques and production information (i.e. operational expenses, input

and output levels and profitability). The findings cover the views of respondents for the interview schedules and these are collaborated with the views of the focus group discussants and the key informants. The quantitative data were analysed descriptively and statistically using ANOVA, independent t-test and margin analysis (Honja et al., 2016) while the qualitative data was based on thematic analysis (Creswell, 2013). The issues are presented in the ensuing paragraphs.

Land Holding Arrangements in the Study Area

From the conceptual framework (Figure 2), land holding arrangements constitute the backbone of the mango business which must be acquired, in order to enable production and marketing of output. The issue of land holding arrangement is one of the key potential opportunities perceived for the sustainable production of mango (Honja et al., 2016; Inkoom, 2014).

In Figure 4, the results revealed that out of the 133 respondents, 57.1 percent specified that the orchard acreages they use for their mango production was their own lands acquired through inheritance and/or an outright purchase. The rest acquired their lands through leasehold (22.6%), families (13.5%) and concession (6.8%). With regards to the concession, it was revealed from the FGD that, usually, the producer takes two-third (2/3) of the produce and the landholder (s) take one-third (1/3). Discussants indicated that producers farming through the concession normally take two-third of the output in that production season and the landholder takes the rest of the one-third.

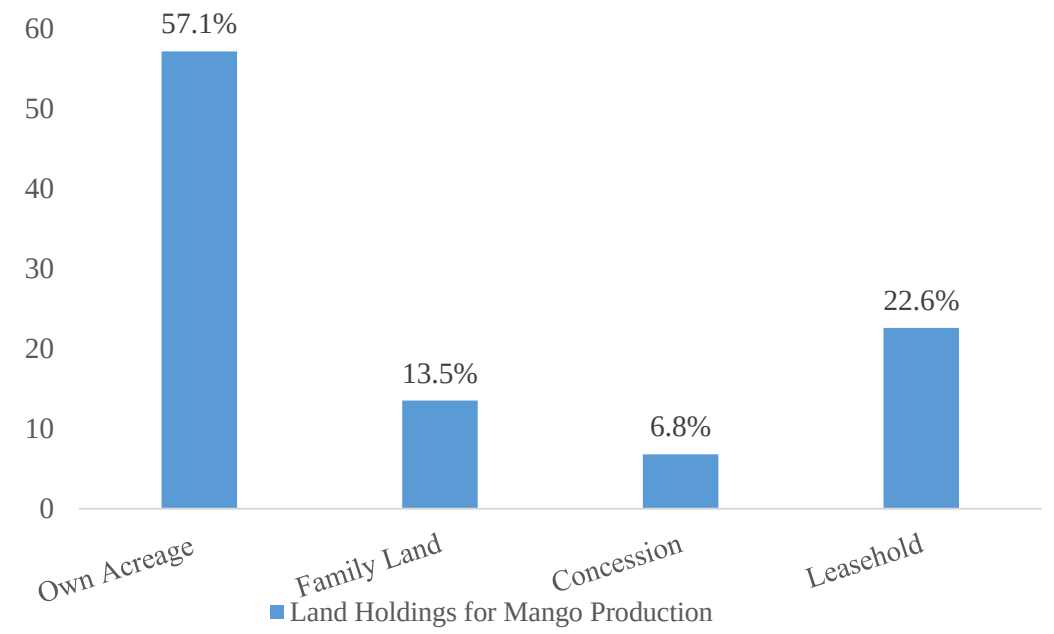

Figure 4: Land Holding Arrangement for Mango Production

Source; Field survey, Khiddir (2019)

From the FGD, it was also revealed that similar to the arrangement of the concession, most of the producers who acquire their orchard acreages through family lands are also into such agreement. They indicated that the produce gotten through this means of land holding arrangement is also shared two-thirds for the mango grower and one-third for the family elders. It was because of the recent lucrative nature of the mango business that allodial landholders and family heads prefer to engage in this form of land consignment than selling out their lands.

The finding that majority of the respondents privately own their orchard lands give credence to the neoliberal theory, which is premised on the idea of individualism and advocates for entrepreneurs to exercise strong private property-rights (Harvey, 2005). Ensuring proper legal documentation of orchard lands thus, serves as an advantage for the producers to break from land disputes (Ajei, 2007; Chomsky, 1999; Kotz, 2015).

The study ascertained the total orchard size for mango production in the study area and the findings were disaggregated by production zones and presented in Table 6. From the table, it can be seen that the total area for mango plantation was 2788.10 acres. The results show that the minimum orchard size owned by a producer was two acres while the maximum was 190 acres with a median orchard size of 14.0 (mean = 20.96; skewness = 3.695) and a quartile deviation of 9.50

Table 6: Orchard Size in the Study Area

Zones	Land Areas		Median	Qtl. Deviation	Min	Max
	No.	%				
Agomeda	1384.50	49.66	12.00	9.50	2.50	150.00
Ayikuma	1059.10	37.99	15.00	9.75	2.00	110.00
Shai-Hills	37.50	1.35	10.00	4.32	2.50	15.00
Kongo	307.00	11.00	15.00	20.00	3.00	190.00
Total	2788.10	100.0	14.00	9.50	2.00	190

Source: Field Survey Data, Khiddir (2019)

From the disaggregated results, the findings illustrate that the Agomeda zone has the highest production area (49.66%), followed by Ayikuma (37.99%) and Kongo zone (11%) respectively (Table 6). The Shai-hills zone had the lowest production area (1.35%). Even though Agomeda had the largest area under cultivation, the median size was higher in Kongo (15.00) and Ayikuma (15.00) than Agomeda (12.00) and Shai-Hills (10.00) respectively.

Mango Varieties Grown by Respondents

According to Honja et al. (2016), the tendency of making the mango production system modernized and marketable in terms of technological input depends on the adoption of improved mango varieties. The study revealed that there were four mango varieties grown by producers in the study area. These are Keitt, Kent, Palmer and Haden respectively. Majority of the mango producers grow the improved varieties such as Keitt and/or Kent (Honja et al., 2016; Inkoom, 2014). Of the 133 mango producers interviewed, majority (60.9%) of the producers use both Keitt and Kent mango varieties for their production while only two producers cultivate all the four varieties (Table 7). The study observed that the Haden variety had been introduced recently and thus has not yet matured.

Table 7: Mango Varieties Grown by Respondents

Mango Varieties	Frequency	Percentage (%)
Keitt	19	14.3
Kent	9	6.8
Haden	1	0.8
Keitt and Kent	81	60.9
Keitt, Kent and Palmer	21	15.8
All the Above	2	1.5
Total	133	100.0

Source: Field Survey Data, Khiddir (2019)

Multiple reasons were advanced by respondents to support their decision of growing a particular variety (ies) of mango plant. It is evident from Table 7 that the 81 respondents who opted for the production of both Keitt and Kent claimed that the reasons for producing these varieties include: marketable, profitability, international preference, export potential, resilient to bad weather, early flowering

and its healthy, strong and tasty nature. Others indicated that they are producing them because they inherited the orchard lands and these varieties were already planted. This is similar to the outcomes of the studies of Badar (2014), Inkoom (2014), Okorley et al. (2014), Honja et al. (2016) that the improved, marketable and preferential mango varieties are Keitt and Kent. The authors, added that these varieties guarantee high returns on investment. This was also confirmed by the Key informants. The key informants opined that Keitt and Kent are currently the preferred mango varieties by both local and international consumers.

Similar attestations were given by the rest (52) of respondents who produce either only Keitt, Kent, Palmer and/or Haden varieties. Particularly, those who added the production of Palmer and/or Haden varieties indicated that they needed diversity in production and also because they serve as a potential market due to seasonal variation in terms of their flowering with the Keitt and Kent varieties. Plate 1 shows the major mango varieties grown by respondents in the study area.

Plate 1: Mango Varieties Grown by Respondents in the study area: From right, Kent and Keitt varieties.

Photo Credit: Author (2019)

With respect to the issue of seasonal variation of different mango varieties, the interviews with the key informants further revealed that the Ministry of Food and Agriculture (MOFA) in collaboration with Federation Association of Ghanaian Exporters (FAGE) were currently piloting about 24 different mango varieties to serve the seasonal need for mango produce. The reason, to increase the window of mango production in the country in order to make the mango product a key foreign exchange commodity.

From the results, the reasons why the respondents chose to produce those kind of mango varieties are consistent with the conceptual framework and the neoliberal theory. From the conceptual framework (Figure 2), adoption of improved mango varieties is one of the indications that foster economic upgrading. The identified prospects of the mango varieties grown in the study area also concur with the postulation of the neoliberal theory, which indicates that one of the basis of successful upgrading depends on the prospects of a particular variety of a product (Harvey, 2005; Pieterse, 2010).

The mango varieties grown by respondents was also analysed using production zones (Appendix F). The results demonstrate that a little over half (50.6%) of the respondents who produce both Keitt and Kent varieties were in the Agomeda zone while Shai-Hills zone had the lowest number of producers (1.5%) producing both varieties. The respondent who produced only the Haden variety was from the Shai-Hills zone. Of the two respondents who produced all the four varieties, one was from the Ayikuma and the other, Shai-Hills zones. A chi-square test of independence was used to establish if there was a difference in the choice of

mango varieties according to production zones (Appendix H). The result was statistically significant at the 0.05 level of alpha (X^2 = 46.473; df = 15; p-value = 0.000; Cramer's V = .341), implying that the respondents' choice of mango varieties to grow were dissimilar across production zones.

An examination of the planting systems that producers adapt in their mango plantations was carried out. This was necessary because how mango trees are planted determine how effectively the producers can manage their orchards (Osena, 2011). The study revealed that there were three types of planting systems. These were mixed cropping, intercropping and mono-cropping (or sole planting). The interview with the District Crops Officer (2th April, 2019) revealed that mixed cropping is a cropping system in which different types of crops are cultivated together. On the other hand, when two or more crops are cultivated simultaneously on the same piece of land, in a definite pattern, it is referred to as intercropping. Mono-cropping, on the contrary, is the practice of growing a single crop on a piece of land.

Table 8 portrays that 46.6 percent of the respondents indicated that they practice mixed cropping while 30.1 practice mono-cropping. The rest (23.3%) practice intercropping. Respondents mixed or inter-crop maize, beans, yam, plantain and/or okro with the mango plantation, which they do during the early stages of the mango plantation.

Table 8: Planting Systems by Respondents

Planting Technique	Frequency	Percent
Mixed Cropping	62	46.6
Intercropping	31	23.3
Mono-cropping	40	30.1
Total	133	100.0

Source: Field Survey Data, Khiddir (2019)

Out of 129 multiple responses, sustaining soil nutrient (26.4%), increasing profit margin (23.3%), workers depending on the other crops (18.6%), ensuring proper land usage (14%), recommended method (12%) and usual practice when the orchard was inherited (5.4%) were cited by respondents as reasons accounting for their choice of either mixed- or inter-cropping as their planting technique. Honja et al. (2016) made similar findings in Ethiopia that, some producers intercrop mango with other perennial crops and coffee during the early stage of maturity, emphasizing that such practice afforded them financial support.

The interviews with the key informants suggested that mixed- or inter-cropping during the early maturity stage of the mango trees was a recommended practice, noting that it was not only for the supplementary income earned but also serves as cover to protecting the plantation from pests, weeds and wind distractions. Contradictory findings were made by Badar (2014) that in Pakistan, mixed- or inter-cropping in mango orchards is not a recommended practice because it lowers production, affects the quality of fruits and attracts various insects, pests and diseases.

The observed reason for the contrary findings between the Ghanaian context and that of Pakistan, might be due to the variety of crops the producers in Pakistan intercrop mango with. This is because Badar's findings indicated that in Pakistan, producers intercrop with cotton and wheat while in the Ghanaian context, producers mixed- or intercrop with maize, beans, yam, plantain and/or okro. In addition, this contrary findings is due to variation in soil type. This is because the soil type in Badar's study in Pakistan was calcareous soil while in the Ghanaian context, according to GSS (2014), the soil type in the study area is the tropical black soil.

On the other hand, the 40 respondents, as depicted in Table 8, who indicated they practice mono-cropping also gave numerous motives to support their decision. Out of 62 multiple responses, main focus on mango production (59.7%), best technique (24.2%) and aiding proper orchard management (16.1%) were the primary reasons provided. The ensuing paragraphs provide details on the production information of mango producers in the study area.

Nature of Mango Production by Respondents

There was an examination of the production information of respondents, which covered variables such as cost of production inputs, input and output levels and profitability (Table 9). The production information of producers plays an important role in helping value chain actors to determine the feasible nature of a particular production network (Cattaneo et al., 2013; Wiggins & Roepstorff, 2011). The first issue examined under the production information was the variable cost of production inputs such as land, labour and operational expenses, incurred by

respondents in mango production per acre. Operational expenses covered cost of planting materials, fertilizers, agrochemicals and farm implements.

Table 9 revealed that the average production cost per acre in the study area was GH¢ 928.01 per acre with a minimum of GH¢82.22 and maximum of GH¢3,566.67 per acre. The study further revealed that the average costs for the various inputs in the production process per acre were Gh¢ 235.94 as for land and its preparation, and Gh¢ 470.10 for labour while, operational costs amounted to Gh¢ 162.50. The finding, therefore, indicated that labour alone accounted for 48 percent of the total production cost per acre while land and operational expenses accounted for 31 percent and 21 percent respectively. Similar finding was made by Inkoom (2014) in the Yilo Krobo Municipality of Eastern Region in Ghana that, labour takes the bulk of the production cost per acre in mango production.

Table 9: Summary Statistics of Production Information of Respondents Per-Acre

Variable Costs of Production Inputs of Respondents Per Acre								
Input Cost Per-acre (GH¢)	Min (GH¢)	Max (GH¢)	Sum (GH¢)	Median (GH¢)	Mean (GH¢)	Std. Dv. (GH¢)	Skewness	
							Stat	Std. Error
Land	10.00	1500.00	31380.14	144.89	235.94	256.59	2.557	.210
Labour	.00	2400.00	62522.78	336.00	470.10	477.42	1.90	.210
Operations	11.92	1050.00	29625.63	162.50	222.74	189.17	1.70	.210
Total cost	82.22	3566.67	123425.42	742.00	928.01	705.00	1.668	.210
Production Levels of Respondents Per Acre								
Output (tons/Per acre)	Min (metric tons)	Max (metric tons)	Sum (metric tons)	Median (metric tons)	Mean (metric tons)	Std. Dv. (metric tons)	Skewness	
							Stat	Std. Error
Major Season	0.16	9.20	230.21	1.36	1.73	1.40	1.919	.210
Minor Season	.04	6.00	88.59	0.39	0.67	0.88	2.905	.210
Total Output	.04	10.00	313.21	1.83	2.36	1.94	1.761	.210

Source: Field Survey, Khiddir (2019)

In order to conclude on the measure of central tendency to report for the variable costs of production of the respondents, the distribution was subjected to a test of normality. This is vital for the study because the costs incurred in the production process may differ according to the level of investment incurred by respondents in the production of mango. According to Creswell (2013), skewness values of ±0.5 are considered acceptable for a normal distribution. Based on these measures, the distribution of the variable costs of production of respondents were positively skewed (skewness = 1.668), indicating that the median production costs per acre invested by the respondents were lower than the mean investment level (GH¢ 928.01). The median variable costs of production inputs was GH¢742.00 with a quartile deviation of GH¢ 914.93.

Production levels of respondents was also examined (Table 9). The results showed that while other respondents have not yet break-even, the maximum production level was 10 tons per acre. The median production level was 1.83 tons (mean = 2.36; std. dv. = 1.94; skewness = 1.761) with a quartile deviation of 0.94 tons per year. As portrayed in the table, average variable production inputs per acre of GH¢ 144.89 on land and its preparation, GH¢ 336.00 on labour and GH¢ 162.50 on operational costs per acre was used to obtain such production level (1.83 tons). The study also showed that the total production level was 6,688.2 tons of mango produce per annum. About 71 percent of these produce were recorded in the major season and the rest of 29 percent in the minor season. The study further indicated that, overall, respondents invest GH¢ 1,951,724.00 to produce about 6,688.20 tons of fresh mango fruits per year.

The variable costs of production inputs of respondents per acre was disaggregated using production zones (Appendix I). The results indicated that the median variable costs of production per acre in Shai-Hills (GH¢ 1,503.00) was the highest, followed by that of Ayikuma (GH¢ 839.29) and Agomeda (GH¢ 693.33) respectively. The lowest median variable costs of production inputs was reported by the respondents from Kongo (GH¢ 570.00). In appendix I, the results demonstrated that the median investment level of Shai-Hills zone was negatively skewed (-1.912), indicating that most of the respondents from that zone invest higher than the zone's mean investment level (GH¢ 1,282.33). The zone's median was GH¢ 1,503.00 with a quartile deviation of GH¢ 409.5

The disaggregated variable costs of production inputs of respondents per acre using production zones were further interrogated by running a one way between-groups analysis of variances (ANOVA) to compare the zones to establish whether there were differences among production costs incurred or not. No significant difference was found at the five percent ($p<0.05$) level between the four production zones: $F(3, 129) = .645$, $p > .05$. The variable costs of production inputs incurred by farmers per acre from the four production zones did not differ significantly in a production year.

There was a further disaggregation of variable costs of production inputs of respondents per acre using sex (see Appendix I). Of the total variable costs of production inputs of respondents (GH¢ 1,951,724.00), 87 percent was recorded for the male respondents, while female investments accounted for the rest of the 23 percent. However, the study found that the highest median variable costs of

production inputs per acre was reported by the female respondents (GH¢ 983.33) and the male respondents reported the lowest median variable costs of production inputs (GH¢ 687.07). To examine whether variations in the variable costs of production per acre pertained in terms of sex, an independent t-test was conducted. There was no significant difference in the variable costs of production inputs per acre for male (M = 906.08; SD = 697.00) and female (M = 1077.63; SD = 761.89); t(131) = .937, p = .927.

Production levels of respondents per acre was also disaggregated using production zones. The disaggregated results indicated that the lowest median production level was reported by the respondents from Ayikuma (1.7 tons), followed by the respondents from Agomeda (1.9 tons) and Kongo (2 tons) respectively. The highest median production level was reported by the respondents from Shai-hills (2.6 tons). This shows that both in terms of investment in production and produce obtained per acre, the respondents from Shai-hills invested higher and obtained more produce than their counterparts in the Kongo, Agomeda, and Ayikuma respectively. This finding gives credence to the position of the neoliberal theory that, there is a nexus between the level of capital inputs and productivity growth (Barrientos et al., 2012).

The study further conducted a one way between-groups analysis of variances (ANOVA) to explore whether differences pertained in respect to the production level among the four production zones. The results show that there were no significant difference at the 0.05 alpha level: F (3, 131) = .353, p = .787. Thus,

the production levels per acre based on the four production zones did not vary among farmers in the production of mango.

There was also a disaggregation of production level of respondents per acre using sex. The disaggregated results showed that the female farmers had a median production level of 2.03 tons/pre acre (mean = 2.56; std. dv. = 1.90; skewness = 1.820) with a quartile deviation of 1.02. On the other hand, the production level per acre of the male farmers was normally distributed. The mean production level per acre for the male farmers was 2.32 tons/per acre (median = 1.81; QD = .92; skewness = .225) with a standard deviation of 1.95. This finding implies that the production level for majority male respondents per acre were lower than their average (2.32 tons/per acre) production level. A further independent t-test was conducted to determine whether variations pertained with respect to the sex disaggregated production level however, there was no significant difference at the five percent alpha level [$t(131) = .469$, $p = .906$].

Output Price and Profit levels of Respondents Per Acre

There was, also, an examination of the output prices and profit levels of the 133 respondents per acre in a production year. This was crucial because output prices and profit levels determine the survival of producers in the mango production and also expand their networks along the value chain (Yumkella et al., 2011). In Table 10, the average revenue obtained per acre from mango production was GH¢ 2,929.64 while the highest revenue obtained was GH¢ 21,666.67, other producers have not break-even. The study indicate that the average profit obtained per acre by

farmers was GH¢ 2,056.31 with a maximum profit of GH¢ 20,633.33. The distribution of profit was positively skewed (skewness = 1.668), indicating that most of the respondents' median profits were lower than the mean (GH¢ 2,056.31pesewas) profit. The median profit was GH¢ 1,247.50 with a quartile deviation of GH¢ 930.67

Table 10: Output Price and Profit levels of Respondents Per-acre

Output Per-Acre (GH¢)	Total Revenue Per-Acre (GH¢)	Total production Cost Per-Acre (GH¢)
Min (GH¢)	244.44	82.22
Max (GH¢)	21,666.67	3,566.67
Sum (GH¢)	389,641.93	123,425.42
Median (GH¢)	2,112.50	742.00
Mean (GH¢)	2,929.64	928.01
Std. Dv. (GH¢)	3,028.36	705.00
Skewness	2.993	1.668

Source: Field Survey, Khiddir (2019)

The profits per-acre of the respondents were further examined using margin analysis. The average profit margin was 78.98 percent per-acre, and the highest profit margin was 95 percent as compared to a minimum of five percent per acre in a production year. The margin distribution was negatively skewed (skewness = -0.702), illustrating that the profit margins of most of the producers in the study area were higher than the mean (0.5938) profit margin. The median profit margin was 0.6300 with a quartile deviation of 0.16. According to Kinkade (2015), a profit-margin line ranging from five percent for a start-up to 20 percent for a matured

established business is regarded as a profitable business. Averagely, the higher profit-margin ratio indicates that the mango production business is profitable.

The finding that producers earn higher profits is in line with the illustration in the conceptual framework that the profit margin levels is the easiest and quickest way producers are able to tell how efficient and profitable the mango business. According to the neoliberal theory, the profitability level of producers is a key determinant that opens up upgrading prospects (Wiggins & Roepstorff , 2011). Producers can ensure and create the niche for an effective and efficient consumer value creation (Collins et al., 2016; Marshall et al., 2006). Thus, high profit margins serve as an advantage for producers to expand their opportunities in new and expanding markets through engaging in higher value production or repositioning themselves within the value chain (Barrientos et al., 2010).

The profit-margin per-acre of respondents was disaggregated using production zones (Appendix J). Subjecting the disaggregated distribution to the test of normality, it was revealed that the profit-margin of the respondents from Shai-Hills zone was normally distributed as the zone's skewness statistic (0.040) fell within the range of +0.5 (Creswell, 2013). Thus, the mean profit-margin of the respondents from Shai-Hills zone was reported as the applicable measure of central tendency. For the Shai-hills zone, the mean profit-margin of the respondents was 0.6750 (median = 0.6700, skewness = 0.040) with a standard deviation of 0.1863. The result indicates that the profit-margin for the majority of the respondents from that zone were lower than their average (0.6750) profit-margin.

On the other hand, the disaggregated result further revealed that, the skewness of the other remaining three zones (Kongo = -0.714, Ayikuma = -0.620 and Agomeda = -1.681) were negatively skewed (see Appendix J). The median profit-margin of the respondents from Kongo (0.6500) was highest, followed by that of Ayikuma (0.6400), and the lowest median profit-margin was reported by the respondents from Agomeda (0.6200).

The disaggregated profit margin per acre of the respondents was further explored by conducting a one way between-groups analysis of variances (ANOVA) to compare the zones to establish whether there were differences with regards to profit margin among the production zones. There were no significant difference was found at the p <0.05 level between the four production zones: F(3, 129) = 1.314, p = .273. The profit margin per acre of the respondents from the four production zones did not differ significantly in a production year.

There was also a disaggregation of the profit-margin per acre of respondents using sex (see Appendix J). From the disaggregated results, the profit-margin distribution for the male producers in the study area was negatively skewed (skewness = -0.645), demonstrating that the profit-margin for most of the male respondents were higher than the mean (0.5827) profit-margin. The median profit-margin for the male respondents was 0 .6150 with a quartile deviation of 0.1725. On the contrary, appendix J showed that the profit-margin distribution for the female respondents was normally distributed. The mean profit-margin for the female respondents was 0.6700 (median = 0.6500, skewness of 0.152) with a

standard deviation of 0.14556. This finding implies that the profit-margins for majority female respondents were lower than their average (0.6700) profit-margin.

An independent t-test was further conducted to compare the mean profit margin for males and females. There was a significant difference in the means of the profit margins for males (M= .0657; SD= .07734) and females (M= .1017; SD= .11482); t(131) = 4.362, p = .039. To examine the magnitude in the differences of profit margin among the two sex groups an Eta Square effect size statistics was undertaken. According to Cohen (1988, pp. 284-7), eta squared range from 0 to 1 and represents the proposition of variance in the dependent variable that is explained by the independent (group) variable.

The guidelines proposed by Cohen (1988) for interpreting the value are: 0.01= small effect; 0.06=moderate effect and .14=large effect. Based on the guidelines, the magnitude of the differences in the means (means difference = .03598; 95% CI: -.07854 to .00657) was moderately large (eta squared = 0.13), indicating essential differences between the sex groups with regards to the profit margin attained per acre in a production year. The subsequent paragraphs focuses on the second objective.

Upgrading Activities in the Mango Value Chain

The second objective relates to the upgrading activities in the mango value chain for smallholder producers. This objective examines issues relating to economic and social upgrading, and to establish whether economic upgrading can necessarily lead to improvements for farm workers (Barrientos et al., 2010). This

is depicted in the conceptual framework of the study where the upgrading activities have nexuses with indicators of both economic and social upgrading, noting that economic upgrading may or may not induce social upgrading. This section centres primarily on certifications and quality standards, market shares of mango produce, market governance, export market access, storage facility access, means of transport, upgrading activities and employment.

Certification and Quality Standards of Respondents

There was a consideration of the issue of certification and standards of the respondents from a general outlook to identify whether producers in the study area adopt internationally accepted good agricultural practices - Global GAP certification. The results of respondents' Global GAP certification were examined. The findings show that 60.2 percent of the 133 respondents had Global GAP certification. This means that majority of the respondents are global GAP certified producers and will be able to market their produce both in local and international markets as they adopted and used good agricultural practices sanctioned locally and globally in their production practices.

The finding that majority of the respondents are global GAP certified producers is in line with the finding made by Inkoom (2014) that most of the producers in Yilo Krobo municipality in the Eastern Region of Ghana were global GAP certified producers. It also supports the expected outcomes in the conceptual framework of the study that certification increases producers' consumer value creation. The finding likewise supports the neoliberal theory's assertion that

meeting certification and quality standard requirements will help foster more viable pattern of production and product consumption (UNCTAD, 2010; Yumkella et al., 2011). The global GAP certification helps producers meet the quality standards required by the international markets.

Appendix K presents a disaggregation of global certification according to the production zones of respondents. The findings indicate that 59.7 percent of the respondents in the Agomeda zone, 58.2 percent in Ayikuma zone, 71.4 percent in Kongo zone and 75 percent of those in the Shai-hills zone had global GAP certifications. This shows that in all production zones, most of the respondents were global GAP certified producers. This is similar to the findings made by Badar (2014) that most of the mango producers in Pakistan have upgraded their operations and acquired quality certifications.

A chi-square test of independence was carried out in order to examine whether there is an association between getting certified and belonging to a production zone, however the test was not statistically significant at the 0.05 alpha level ($\chi^2 = 0.834$; df = 3; p-value = 0.841; Cramer's V = 0.079) (see Appendix K). This reveals that there is no connection between a producer being certified and belonging to a particular zone.

Global GAP certification was also disaggregated based on the sex of respondents (Appendix L). The disaggregated results disclosed that a majority of female (70.6%) and male (58.6%) respondents had acquired global GAP certification. In order to examine whether there are association with global GAP certification and sex category, a chi-square test of independence was conducted.

The results did not show statistical significance at the five percent level ($\chi^2 = 0.886$; df = 1; p-value = 0. 347; phi = -0.082), demonstrating that there were no nexus with regards to any of the sex category and being certified with global GAP certification.

Global GAP certification was further analysed using educational level of respondents (Appendix M). From the disaggregated results, 66.7 percent of the respondents who had no formal education, 60.5 percent of those with SSS/Technical education certificate and 69 percent of those with Tertiary certificates were global GAP certified producers. Half (50%) each of the respondents with Primary and JSS/Middle School certificates respectively were also certified producers.

To examine whether there is an association pertaining to being certified and educational level of respondents, a chi-square test of independence was performed and there was no statistical significance at the 0.05 alpha level ($\chi^2 = 3.300$; df = 4; p-value = 0.509; Cramer's V = 0.158) (see Appendix M). This hints that there is no variation in the global GAP certification based on educational level. This is because regardless of the educational background, all producers are normally taken through series of educational programmes, by USAID and GIZ, to help them appreciate and acquire the global GAP certification.

There were 53 respondents who were not global GAP certified producers and they advanced several reasons why they weren't certified. Of the 87 multiple responses, lack of finance (24.1%), certification expiration (21%), registration in progress (18.4%), registered but not approved yet (16.1%), ignored when asked about certification procedures (12.6%) and having plans to register (8.1%) were the

primary reasons that respondents provided as accounting for them not being global GAP certified producers. The finding that financial constraint was the reason why respondents were not global GAP certified producers supports the assertion of Barrientos et al. (2010) that smaller and less efficient producers face financial challenges in meeting the quality standards required by buyers.

It was also necessary to ascertain the requirements of global GAP certification. From the FGD and the interviews with the key informants, it was revealed that the Global Good Agricultural Practices (Global GAP) certification has become the most essential certification standard in the international produce market for export of horticulture products. They indicated that, for Ghanaian producers, the standard requirements are those of the Global GAP certification body and Ghana Standard Authority (GSA). Under the period of review, the study found that, at the production level, the certification has become "de facto" mandatory for fresh mango exportation to the European Union (EU) and the United States since 2007. It was evident that, even though, the standard certification is not mandated by law and therefore remains 'voluntary', the reality is that compliance with Global GAP certification has become an 'entry-ticket' into the international produce markets.

The study revealed that, the Global GAP certification guidelines ensure good agricultural practices by focusing first on food safety, and a number of issues concerning environmental quality (soil, wildlife and water conservation), worker health and safety, and traceability on the farm. The study also revealed that the certification includes some initial investments (such as safety equipment, toilets,

protective cloths, water taps, canteens for workers, decent farmhouse and storage facilities for agricultural inputs and outputs, respectively) that require considerable financial capital to upgrade the farm. In addition, it entails yearly costs for internal and external inspections by certification auditors. The interview with the District crops officer (2nd April, 2019) disclosed that their directorate provides producers with the internal inspections.

The external inspections are done by certified Global GAP certification bodies. The study found that, in Ghana, currently, the certified Global GAP certification bodies include DNV GL Business Assurance Inc., SGS Ghana Limited and Food and Drugs Authority (FDA). The certificate also requires that the producer should know how to read, write, and keep records, which means a high level of human capital. Finally, Global GAP certification requires that produce be tested for pesticide residues. The study also found that producers have two options to obtain certification under the Global GAP: they can apply individually or apply collectively for a producer group certificate. Obtaining the certification individually means that the producer receives a "single producer certificate" following a successful audit by a Global GAP approved certification body.

With the producer group certification, a group of producers with a shared mandatory Quality Management System (QMS) receives one certificate for the entire group following a successful audit of the QMS and random inspections of some of the producers by a Global GAP approved certification body. From the FGD (1st April, 2019), it was revealed that the Trade and Investment Programme for Competitive Export Economy (TIPCEE) in 2013, financed their Global Gap

producer group certification. This increased their certified producer numbers from 40 to 60 Global GAP certified producers. The requirement with TIPCEE was that the group certificate will be renewed if all producers were able to comply with the standards. In the subsequent year, however, the whole group's certification was not renewed because of non-compliance of some producers. Since then the producers have resorted to single producer certification.

The study found that the group certification is often the only possibility for small-scale producers to become certified since it allows reducing individual cost of compliance. This is because compliance with standards often requires substantial physical, human, financial, informational, and network resources. From the FGD, it was evident that inadequate access to these resources and the certification costs were the most common factors explaining the non-compliance of small-scale producers with Global GAP certification standards. Thus, implementation costs remain the major constraint for producers to adopt Global GAP certification. In this respect, the discussants (FGD, 1st April, 2019) explained that out of the 80 producers who were Global GAP certified, only 17 of them are sanctioned this new production season while the rest (63) were embargoed due to non-compliances relating to implementation costs especially in respect of workers' occupational health and safety and poor farm management

The above submission implies that the nature of the certification – namely the annual compliance costs and also the type of capital required – may affect producers differently. This is because the compliance to the requirements of the certification depends on the financial capacity and readiness of the producer

(Barrientos et al., 2010). However, generally, the study found that the Global GAP certification is a good way for producers to regain and maintain consumer trust and prevent contamination. The study identified that, regarding incentives, the Global GAP certification may offer producers more demand reliability in terms of volume of produce and/or attract higher prices.

The study further revealed that there were different types of Good Agricultural Practices (GAP) certifications that the Ghanaian horticultural industry can adopt in order to serve other distinct market segments. These certification bodies include: FAIRTRADE, harmonized GAP, Produce Good agricultural Practices (EurepGAP), Group GAP, ORGANIC and GREEN Label. The next issue examined was markets targeted by producers and marketing arrangements.

Market Information: Target Markets, Market Share and Market Governance.

There was an examination of the market information of respondents. This was important in the study because the structure of market arrangements sets the performance criteria in terms of quality, delivery and price standards that shape and create challenges or alternative opportunities for upgrading (Gereffi & Lee, 2014). The study found that majority of the producers in the study area produce for the local and processing markets (Table 11). More than half (57.9%) of the respondents produce for both the local and processing market segments. A few of the respondents produce for only the local market (6%) and processing market (3.8%) respectively. None of the respondents produce for only the export market.

Table 11: Targeted Market Segments

Market Segments	Frequency	Percent
Local Market	8	6.0
Processing Market	5	3.8
Local and Export Markets	22	16.5
Local and Processing Markets	77	57.9
All Markets	21	15.8
Total	133	100.0

Source: Field Survey Data, Khiddir (2019)

The respondents gave a variety of reasons to support their decision of targeting either of the market segments. In Table 11, the respondents who indicated that they produce for either the local and/or processing markets claimed that there were market access in both local and processing markets. They also pointed out that the reason why they do not target the export market was that the quality requirements of this market segment was very difficult to meet owing, especially, to the prevailing bacterial black spot (BBS) disease.

The interview with the key informants confirmed this assertion. For instance, the key informant at MOFA noted that "the rife of the BBS has constrained many producers from accessing the export market. In the year 2015, this resulted in the ban of most Ghanaian horticultural products, including mango on the international produce markets such as the EU" (Key Informant, MOFA, 4th April, 2019). The finding that most producers have easy and convenient access to both the local and processing market corroborates Inkoom's (2014) finding that, in

the Yilo Krobo Municipality in the Eastern Region of Ghana, producers had opportune access to both local and processing markets. On the other hand, the respondents who were able to target the export market claimed that they had built a successful market relationship with the exporters.

Generally, few (17.3%) of the respondents were able to export on their own while, the majority (82.7%) were not able to export their produce. Asihene (2012) and Inkoom (2014) respectively arrived at similar conclusions that in the Yilo Krobo municipality of the Eastern Region of Ghana, majority of the producers were not able to export their produce on their own. The 110 respondents (82.7%) who indicated that they were not able to export their produce gave numerous reasons for their inability to access the export market. Out of 241 multiple responses, high capital requirement (28.2%), difficult procedures (21.2%), no certification (19.9%), processors mostly buy all the produce (16.2%) and having plans for this production year (14.5%) were cited by respondents as reasons accounting for their inability to access the export market.

However, the results further indicated that for the 43 respondents who targeted the export market, 53.5% of them were able to export, on their own, some of their produce last production season. A similar finding was made by Inkoom (2014) that, in the Yilo Krobo municipality in the Eastern Region of Ghana, majority of the producers who targeted the export market were able to export some of their produce.

In addition to identifying the targeted market segments of respondents, the study also addressed the market unit share in all the identified market segments.

This was important as it would helped in assessing the level of economic upgrading in the study area (Bernhardt & Milberg, 2011). Appendix N illustrates the market unit share distribution of the respondents. The processing market share was 46.5% of the total produce of 6606.20 tons, followed by the export market (30.1%) and local market (23.4%) respectively. It was also evident in Appendix N that, out of the 1,986.83 tons export unit share, 43 percent was exported by the producers themselves. This finding hints that, in the study area, producers are experiencing economic upgrading. This is because the market unit shares for both the processing and export markets were more than the unit share for the local market.

According to Bernhardt and Milberg (2011), if the processing and export unit share of production are more than the unit share in the local market, then there is an indication of economic upgrading as producers are able to meet most of the requirements of the upstream buyers (processors and exporters) along the value chain. This, also, gives credence to the assertion of the neoliberal theory that, upstream market niches (processing and exporting markets) are opened up to downstream actors (producers) when there is upgrading at the production level (Marshall et al., 2006). This result is, again, in line with the relationships in the conceptual framework on economic upgrading. The conceptual framework indicates that increase in processing and export market unit shares are indications of economic upgrading.

The market governance structure was another issue examined. From literature reviewed, market governance is in two forms: hierarchical (where upstream actors dictate prices) and spot-market transactions (also called synergistic

governance, where prices are determined through negotiations) (Gereffi & Lee, 2014). The findings demonstrate that more than four-fifth of producers in the study area indicated that the market governance between them and buyers were through the spot-market transactions. Six respondents, on the other hand, claimed that the governance structure was hierarchical.

A variety of reasons were advanced by respondents to support their claims of either indicating that the produce prices were through spot-market transactions or hierarchical. The 127 respondents who indicated that the governance structure was spot-market transaction, explained that produce prices were set through negotiations determined by market demand and supply. They noted that the negotiations depended on the size and quality of produce, production season, availability of produce and the exchange rate. This accounted for their response that the governance structure is spot-market transaction.

The six respondents who specified that the governance structure was hierarchical, argued that sometimes the minimum and maximum prices of produce are pre-set by the executives of the association. It was evident from the FGD that, actually, executives occasionally make such marketing arrangement but this is mostly done in the major season when produce are abundant. The discussants (FGD, 1st April, 2019) revealed that the association sometimes take this initiative in order to help members sell their produce especially in the major season, when produce are in abundance and buyers are scarce. This finding, generally, shows that the principal market governance structure in the study area is spot-market transaction.

The finding, that spot-market transaction is the predominant market governance structure, is consistent with the findings made by Badar (2014) and Honja et al. (2016) that in Pakistan and Ethiopia respectively, the governance structure governing the mango value chain is the spot-market transaction. This suggests that, at the production level, producers were experiencing economic upgrading. This is because the nature of transactions defines the form of governance that affects upgrading of the parties along the chain (Gereffi, 1994). Hierarchical governance poses distinct challenges for upgrading at the production level of the chain while the spot-market form of governance creates upgrading prospects for the producers along the chain (Lee & Gereffi, 2014). This is, again, in line with the conceptual framework of the study as it postulates that governance system regulates chain market arrangements and serves as a basis for economic upgrading.

The issues of packaging, storage and the means of transporting mango fruits were examined. This was important in the study because efficiency in production and marketing of agricultural products in modern agri-food industries is attributed primarily to technological innovations in packaging, storage and chain transportation facilities (Best & Mamic 2008; Badar, 2014). The results showed that 39.1 percent of the respondents sell their produce in boxes/crates, 24.1 percent sell theirs in sacks while 2.3 percent sell by weighing. It was also evident that 31.6 percent sell their produce in all the three packaging forms. A few (4) of the respondents indicated that they sell theirs in tricycles or by counting them in pieces, particularly, to the market women.

From the FGD, it was revealed that, primarily, produce are sold in boxes/crates and then weighed. They indicated that all produce sold to processors and exporters are packaged in boxes/crates and weighed. This finding is congruent with Inkoom's (2014) finding in the Yilo Krobo Municipality that, more producers sell their produce in boxes/crates. Producers in the study area adopt the standard packaging methods and this reduces extensive bruise to fruits, thus minimizing post-harvest losses that rise from handling of fruits during transit to market destination segment (Badar, 2014; Inkoom, 2014).

The results further showed that produce of respondents are transported either through buyers' own vehicles, commercial vehicle and/or both. Specifically, 45.9 percent of the respondents' produce are transported by means of buyers' own vehicle, and 23.3 percent through commercial vehicles, while the rest are transported by using either both means of transportation. This implies that more of the respondents transport their produce through buyers' own vehicles.

It was, however, revealed from the FGD that, producers mainly do not bear the cost of harvesting and transportation. The discussants (FGD, 1st April, 2019) noted that producers don't usually bear the cost of harvesting and transportation. All the buyer category usually come with their harvesters and means of transportation. However, for exporters and processors, if a producer delays and the scheduled date to transport their produce elapse, the producer has to bear the cost of transportation.

The above submission suggests that the responsibility of the cost of harvesting and transportation lies within the mantle of the buyers. This means that

producers are not burdened with the costs of harvesting and transportation and thus indicates the existence of co-chain management of cost between producers and buyers along the value chain. This facilitates economic upgrading especially at the production level (Barrientos et al., 2010; Pietrobelli & Rabellotti, 2006). The findings, as well, is in line with the expected outcome in the conceptual framework that opportunities such as co-chain management of costs for producers is an indication of economic upgrading as it increases producers productive capacity.

In respect of storage facility, according to the focus group discussants, there is only one mango cold storage house shared by three mango farming districts - the Shai-Osudoku, Yilo Krobo and Manya Krobo districts. They indicated that the facility was built by the Millennium Development Authority (MiDA). The purpose of the facility, as they indicated, was storage of produce meant for exportation. They noted that after the packaged produce are sent to the storage house, they are perfumed with preservatives before the due time for exportation. The discussants indicated that, the exporters who buy from the producers in the study area include Bomart limited, Golden limited, Valley Fresh limited, Bassam limited and Asare and Co. limited while the processors are Blue Skies limited and HPW limited.

Analysis of access to the storage facility was also carried out. The results revealed that out of the 133 respondents, 80.5 percent indicated that they do not have access to the storage facility while 19.5 percent had access to the facility. Majority (107) of the respondents who noted that they do not have access to the storage facility gave some reasons to back the point. Based on the 201 multiple responses, the most cited was that produce were pre-ordered before harvesting

(37.3%). Other reasons mentioned were storage is needed when the intent is to export (30.8%), availability of ready market (20.9%), and only rich producers have access (11%). This, primarily, indicates that producers who do not target the export market do not necessarily require to store their produce. The next issue I examined was the upgrading activities, at the production level, that producers have thought about as well as those they have actually employed in the production process

Upgrading Activities at the Production level

Upgrading practices, at the production level, is key to yielding economic benefits and contributing to society and the environment (Bernhardt & Milberg, 2011). From literature reviewed, upgrading practices at the production level include land improvement, use of value added seedlings, modern orchard management, skill training and use of box/crate packaging (Wiggins & Roepstorff, 2011)).

With respect to land improvement, all the 133 respondents indicated that they have thought of improving their orchard lands. The results also revealed that 92 percent of them claimed that they have employed the modern land preparation methods such as ploughing. The rest of the eight percent hinted that they have not really adopted this upgrading practice. Those who indicated that they have improved their land preparation method indicated it is for certification purposes, maintaining soil quality and helping them reduce the tedious nature of hoeing. On the other hand, the respondents who admitted that they have not applied the modern land preparation method asserted that this was because of capital constrain and the location of the orchards, noting that plantations around the rocky hilly savannah areas in the district cannot be ploughed using tractors.

In respect of the use of value added seedlings; out of the 133 producers in the study area, 94 percent had thought of using improved seedlings in their plantations. This, they indicated, was for harvesting standard quality produce, attracting exporters to buy their produce and also for certification purposes. The eight respondents who mentioned that they have no opportune time to employ it alleged it was because of their lack of information on the improved seedlings. Of the 125 respondents who had thought of using the improved seedlings, 81.6 percent had actually adopted the improved seedlings in their plantations. This results show that majority of the respondents have adopted the value added seedlings in production.

The results on the upgrading practice about modern orchard management also revealed that, more than four-fifth of the 133 respondents asserted that they have thought of and been gratified with the use of modern orchard management practices such as recommended application of fertilizers, pruning and good harvesting methods. They considered it as means for controlling diseases and pest invasion, enhancing good yield and also a requirement for certification. The few respondents who had not thought of employing this upgrading practice cited the capital intensive nature of it as a reason. This, therefore, implies that most of the producers in the study area are engaged in upgraded orchard management practices.

The study further discovered that, for skill training as an upgrading activity at the production level, all the 133 respondents indicated that they are being notified by the association of the importance of producers appeasing themselves with regard to technical trainings relating to mango production. Evidence from the FGD and

the key informant interviews also revealed that skill training is, mainly, the key complementary service provided to producers. This implies that all producers in the study area had thought of and equipped themselves with the necessary skills for mango production. Also, for packaging as a practice of upgrading, it was evident that all producers in the study area were instrumented by buyers about focusing on the usage of box/crate packaging in order to mitigate post-harvest loss due to handling of fruits. This, as well, denotes that respondents were receptive to adopting improved packaging methods.

According to Gereffi and Lee (2014), improvement in the operations of production is an indication of economic upgrading. The findings, therefore, suggest that, at the production level, producers in the study area are experiencing economic upgrading. This was also supported by the focus group discussants. They discussed that the producers in the study area were progressively adopting recommended practices in order to boost production and productivity. This corroborates the argument of the neoliberal theory that, economic upgrading takes place when there is progressiveness in the activities of production (Harvey, 2005), and aligns with the expected outcome in the conceptual framework of the study that adoption of improved modern practices at the production level signifies that there is progressiveness in production activities. The subsequent paragraphs focus on the social upgrading for workers.

Contractual Arrangements between Producers and Workers

As established from the study, at the production level, producers were experiencing economic upgrading, and so it is vital to examine whether there are linkages between the economic upgrading of producers and the social upgrading of workers (Barrientos et al., 2010). From literature reviewed and the conceptual framework (Figure 2), economic upgrading does not necessarily lead to improvements for workers. The study found that, at the production level, respondents required a workforce of both permanent and temporary workers to perform various functions such as planting, nurturing, spraying, pruning, harvesting and general orchard management. It was also evident that out of the 133 respondents, 89.5 percent had employed a permanent worker (s) to work on their farms. The rest had no employment arrangements with workers but rather depended on the family for labour when the need arose.

The results further revealed that the distribution of the permanent number of employees of the 119 respondents was positively skewed (skewness = 4.350) insinuating that the median number of workers employed by a producer in the study area was lower than the mean (3.1) number of employed workers (Appendix O). The median number of employed workers was two with a quartile deviation of 1.5. In addition, it was also realized that the median household size was six (mean = 6.2; skewness = 1.376) with a minimum of two to 17 and a quartile deviation of 1.5. On the average, therefore, the permanent labour employed by producers in the study area is two and the household labour that can be engaged in mango production is six persons.

The above findings are consistent with the findings made by Badar (2014) that in Pakistan, producers mostly engage family labour and, if required, one or two permanent workers. Similar finding was also made by Inkoom (2014) that in the Yilo Krobo Municipality, the average household labour that can be supplied to mango production is six persons. This, therefore, indicates that the production level of the mango value chain generates sizeable employment opportunities. This is also consistent with the expected outcomes in the conceptual framework of the study that economic upgrading, at the production level, has nexuses with the generation of sizeable employment prospects.

The study, however, found that employment opportunities for females were quite absent. According to the respondents, hiring females for orchard management is socially inappropriate. They cited that the tough nature of the activities and health and safety issues were the reasons for the absence of female employment opportunities at the production level. That notwithstanding, female household members were considered as helpers in the orchard management activities particularly at the harvesting season. Thus, the nature of work and health and safety issues are the reasons accounting for the lack of employment opportunities for females at the production level. Badar (2014) made similar conclusion in Pakistan that, employment opportunities for women at the mango production level are quite dismal because of the tough nature of the work, safety and cultural issues.

With respect to how permanent workers are hired, the results indicated that out of 119 multiple responses, hiring through agents (96.6%) and engaging workers from their other businesses (3.4%) were how respondents get to employ their farm-

workers. The respondents who indicated that they get to hire their workers through agents asserted that they were either aided by the association, fellow producers or through announcements for agents to bring the workers. They noted that these workers mostly were either from Northern Ghana or North Togo. It was further revealed that respondents do not hire workers from their own communities because their own people were not interested in hard work. The discussants (FGD, 1st April, 2019) indicated that our people are not interested in any hard work but rather want white-collar jobs. This indicates that these permanent workers are migrants and thus, are not natives of the mango production district.

The wage rate per month for permanent labours was also examined. The results showed that while the minimum wage rate per month for permanent farm-workers was Gh¢ 200, the maximum was Gh¢ 500. The distribution of the wage per month for workers was negatively skewed (skewness = - 1.317) indicating that the median wage per month for most workers was higher than the mean (Gh¢ 272.3) wage per month. The median wage per month was Gh¢ 300 with a quartile deviation of Gh¢ 50. According to the Ministry of Employment and Labour Relations [MELR] (2015), the monthly minimum wage rate in Ghana is pegged at Gh¢ 351.45 pesewas. This, therefore, indicates that labourers in the study area are paid lower than the legislated monthly minimum wage rate.

The results indicates a social downgrading with respect to workers' wage levels. This is because when the outcome of measurable standards of social upgrading in terms of wage level is lower than the legislated wage level, workers are experiencing social downgrading in that respect (Kinkade, 2015; Nathan &

Sarkar, 2011). This conforms to the criticisms of the neoliberal theory that the economic efficiency postulation of the theory is focused on profit maximization at the expense of workers' legitimate entitlements such as wage levels (Fleming, 2016). This is also in line with the expected outcome in the conceptual framework of the study on social upgrading. The conceptual framework (Figure 2) posits that the resultant effect of economic upgrading of production can lead to social downgrading.

The study further found that the absorbed household labourers are not paid a predetermined wage rate per month but rather given an amount of money, customarily called 'Che-fa' or Ayi koo, at the end of each harvesting season. It was also evident that producers determined the amount to give based on the profit-margin of that production season. Evidence from the Worker Group Discussions (WGDs) also revealed that workers were paid accumulatively. They indicated that their employers accumulate their salaries and pay them after the harvesting season when they sell out the season's output. In this respect, worker group discussants from the Ayikuma zone (WGD, 19th March, 2019) said that their employer pays them Gh¢300 per month but accumulate them for every six months after harvesting. This illustrates that producers in the study area pay workers cumulatively every six months after harvesting the mango fruits.

There was also examination of the labour working hours per day. This was important in the study because labour working hours also serve as a measurable standard of social upgrading (Barrientos & Smith, 2007). The distribution of the labour working hours per day revealed that the maximum number of working hours

per day was 12 hours while the minimum was two hours. The mean labour working hours per day was 7.03 hours (median = 7; skewness = - 0.114) with a standard deviation of two hours.

According to section 33 to 39 of the Labour Act, 651, which covers hours of work, the set maximum hours per day for farm-workers is eight hours (MELR, 2015). From the results, it is evident that workers in the study area were working within the maximum legislated working hours for farmworkers. This, therefore, implies that farmworkers in the study area were experiencing social upgrading with regards to the measurable standard for working hours. This is because when the working hours are lower than the legislated measurable standard for working hours, there is an indication of social upgrading in that respect (Nathan & Sarkar, 2011).

With regard to contract arrangements, all respondents indicated that, in addition to the salaries that they pay their workers, they also provide them with accommodation, lunch and an acre within the orchard lands to either mix or inter-crop with the mango plantation. Evidence from the WGDs supported this assertion but most of the workers revealed that, for the accommodation, some of them share their rooms with about two to five roommates. They, further pointed out that the conditions of most accommodations were derogatory. They indicated that some of these accommodations do not have electricity, foam mattresses and washrooms. They also indicated that the lunches provided to them were not satisfactory and most at times they had to buy or prepare extra lunch.

The discussants (WGD, Agomeda zone, 20th March, 2019) remarked that they provide them with accommodation but there are no lights and water. For water,

they pay and fetch it elsewhere and most at times buy or prepare their own food. They indicated that some of their brothers do not even have rooms and therefore, sleep two to five in a room and have complained but the employers still doesn't want to provide them with conducive accommodation

The worker group discussants from Ayikuma (21st March, 2019) also said that the issue of accommodation is a challenge because some of the rooms they provide for them are without electricity and washrooms. These submissions insinuate that most of the accommodations provided for the workers were in unfavourable conditions. That notwithstanding, few of the workers indicated that their employers take good care of them and that their living conditions were improving. For instance, a worker noted that "for my working condition, my employer does everything for me. The employer takes care of me like his own child, provides shelter, food, bought mobile phone for me, registered me with the NHIS and take care of me when I am sick" (A quote from a WGD, Agomeda zone, 20th March, 2019). This, therefore, implies that even though majority of the workers' accommodation conditions seem unfavourable, the situation of others were improving.

According to Van-Biesebrock (2011), when the status of majority of workers' measurable standard for a particular decent working outcome within a specific industry is derogatory, there is an indication of social downgrading for the whole industry without looking at specifics. The findings therefore insinuate that, generally, farm workers were experiencing social downgrading with regards to the measurable standard for decent provision of accommodation.

In addition to the above examinations on social upgrading, the measurable standard for skill training was also considered. The result depicts that all respondents who indicated they have employed workers, had arranged skill trainings relating to orchard management for their workers. Evidence from the WGDs supported this assertion. As discussants from Kongo (WGD, 20th March, 2019) indicated that their employers always train them about orchard management practices. They have even taught them how to speak some of the local dialects such as Twi, Dangbe and/or Ewe.

It was also evident from the WGDs that workers receive skill trainings on nurturing seedlings, chemical application, pesticide handling, mulching, first aid and safety precautions, farm hygiene and maintenance, pruning, and harvesting and packaging methods. This, therefore, insinuates that producers in the study area were receptive to training their workers in various orchard management practices, indicating social upgrading for skill training measurable standard.

According to Bernhardt and Milberg (2011), an industry is experiencing social upgrading when the measurable standards of decent working outcomes – such as employment category, accommodation, working hours, wage levels, skill training and health and safety – of majority of the workers are realized.

From the results, it was realized that only working hours of workers and skill training met the measurable standards of decent working outcomes. The majority of the decent working outcomes – such as wage levels, accommodation, health and safety – were socially downgraded. This denotes that, generally, workers in the study area were experiencing social downgrading. This finding supports the

criticism of the neoliberal theory that the resultant effect of the theory weakens the social goods of production such as social safety nets (Sarkar et al., 2013). This also conforms to the expected outcomes of the conceptual framework of the study on social upgrading. The conceptual framework (Figure 2) alludes to the fact that economic upgrading might not necessarily translate prudently to social upgrading by ensuring better wages and decent working conditions.

After the establishment of the status of economic and social upgrading for the smallholder producers, it is essential to ascertain some of the constraints and opportunities for economic and social upgrading. The next section will focus on the constraints and opportunities for economic upgrading.

Constraints and Opportunities for Economic Upgrading

The contents of this section concentrate, basically, on the third research question which is about the key constraints and opportunities for economic upgrading in the mango value chain for smallholder producers. Fundamentally, the issues of interest covered availability of market prospects and barriers to market access, financing of production, support services to boost production, major constraints impeding productivity and general opportunities that can be exploited for economic upgrading.

Frequencies, percentages, figures and thematic analysis were employed in analysing this objective. These methods of analysis were appropriate because the data were of the nominal type. The availability and sufficiency of market prospects and strategies and mechanisms denote existence of adequate opportunities for

economic upgrading while their inconsistent provision imply a weak existence of opportunities (Neilson, 2014). The implication is that existence of market prospects and strategies and mechanisms can be exploited for economic upgrading.

Available Market Prospects for Producers

The availability of market prospects for producers in the study area was examined on the basis that the availability of these market prospects can be exploited for economic upgrading (Bernhardt & Milberg, 2011). The results show that 60.2 percent of the respondents indicated that there were specific market prospects that could be taken advantage of to propel economic upgrading whereas 39.8 percent expressed that they had no idea about existence of any market opportunities.

The respondents (80) who indicated that there were some specific market prospects identified several market avenues that could be exploited. The more cited market avenue that respondents thought they could exploit was the processing market (48.7%). A few of the respondents indicated that the high demand for fresh mango fruits in major cities such as Accra, Tema, Kumasi, Tamale and Takoradi serve as a source of market opportunity. The other market avenues identified included the export market (17.4%) and the growing market for dry mango chips (12.8%). This implies that most of the producers in the study area were aware of the existence of these market opportunities that they could tap to support in enhancing economic upgrading.

Similarly, the key informant interviews revealed that there were market opportunities present in both local and international horticultural markets for

mango producers. For instance, a key informant from MOFA (4th April, 2019) remarked that, "the mango product has a recognized potential both in the processing and export markets including in the local fresh fruit markets in our large cities such as Accra and Kumasi". This finding hints that producers can exploit the identified market prospects to enhance economic upgrading. This is in line with the assertion of the institutional theory that availability of prospective markets for industrial players creates the higher likelihood of progressiveness in their operations (Glover et al., 2013). It is also described in the conceptual framework of the study that the availability of market opportunities can serve as a bridge for producers to exploit in order to enhance economic upgrading.

The barriers in accessing these market opportunities was also considered. The results showed that out of the 80 respondents who indicated that there were market avenues to exploit for economic upgrading, 58.8 percent indicated that there where barriers in accessing these markets, while 41.2 percent expressed that there were no barriers in accessing them. The respondents (47) who indicated that there were barriers to accessing these market opportunities cited several reasons. Out of 89 multiple responses, capital requirement (52.8%), difficult export requirements (31.5%) and seasonal fluctuation of outputs (15.7%) were the main reasons respondents gave as accounting for their inaccessibility to the various identified market avenues. This suggests that capital requirement is the major barrier that impedes producers from accessing the identified market prospects.

The findings show that despite the availability of market opportunities for producers to exploit for economic upgrading, capital and export market

requirements were major barriers hindering them from accessing these identified market prospects. This is in conformity with the expected outcomes of the conceptual framework of the study on opportunities for economic upgrading. The conceptual framework suggests that availability of market opportunities can serve as a bridge for producers to exploit for economic upgrading however, there might also be challenges impeding them from accessing these markets.

Source of Financing Mango Production

Source of financing production is a key determinant with respect to smallholder producers' capacities to enhance the operations and management of their production network. This is because industrial capabilities depend on the financial resources available to boost the growth of production networks in an industry as indicated in the neoliberal theory (Gerrefi & Lee, 2014). Table 12 presents the results on the sources through which respondents finance their mango production.

Table 12: Source of Financing Mango Production

Source	Number	Percent
Self-Financing	133	55.2
Family & Friends	46	19.1
Bank Loans	42	17.4
Fellow Producers	11	4.6
Association loans	9	3.7
Total	241*	100

Source: Field Survey Data, Khiddir (2019)

*More than the population size due to multiple responses

In Table 12, the results illustrate that out of 241 multiple responses, 55.2 percent financed production through self-financing, 19.1 percent through family and friends, 17.4 percent through bank loans while 4.6 percent mentioned that they got finance from their fellow producers. Only a few respondents mentioned that they sometimes receive loans from the association to finance their production. This finding generally corroborates the findings by Badar (2014), Inkoom (2014) and Honja et al. (2016) that the predominant source of financing for mango actors at the production level is self-financing. It was further evident that most of the responses which mentioned financing through bank loans, noted that these were finances from the Ghana Export-Import Bank (Ghana EXIM Bank) through the Export Development and Investment Fund (EDIF).

Support Services Accessible to Respondents

According to Inkoom (2014), support services have been identified as a major factor that influence producers' productivity level. With regard to support services that producers in the study area received, the results demonstrated that out of 137 multiple responses, 97 percent related to access to technical training on mango production. Evidence from the FGD and the key informant interviews further revealed that technical trainings, extension services, production manuals, certifications and provision of logistics, such as office equipment, were some of the support services provided.

The finding above is consistent with Inkoom's (2014) finding in the Yilo Krobo Municipality that, the primary support services for producers include

technical trainings and general extension services. It also conforms with the expected outcomes in the conceptual framework of the study that the provision of support services promote access to information on markets, technology and innovations which play an important role in enhancing production activities. It, equally, supports the institutional theory's assumption that the provision of technical resources is vital in determining how changes in social values, regulations and technological advancements affect decisions regarding sustainable value chain management practices (Rivera, 2004; Ball & Craig, 2010).

There was a further examination on providers of the support services. The findings showed that out of 351 multiple responses, the most mentioned providers were NGOs (34.7%), fellow producers (21.9%), government (21.7%) and the Mango Grower Association (21.7%) respectively. This, therefore, demonstrates that NGOs were the major providers of support services to producers. This finding does not agree with the earlier findings of Inkoom (2014) that the major provider of support services to producers is the mango farmers association. This contrary finding is due to location variation, as Inkoom's study was done in Yilo Krobo Municipality, while this study was undertaken in Shai-Osukodu District.

Evidence from the FGD revealed that the providers within the NGOs category were German International Development Corporation (GIZ) and the United States Agency for International Development (USAID). It was also revealed that government institutions which served as service providers for producers in the study area were Ministry of Food and Agriculture (MOFA) and National Business for Small-scale Industries (NBSSI). Producers also received support services from

the Ministry of Local Government and Rural Development (MLGRD) through the Shai-Osudoku District Agricultural Directorate (SODAD). They indicated that the Federation of Association for Ghana Exporters (FAGE) was also a key support service provider. It was further revealed that the principal support services producers received were technical trainings on mango production.

Given that technical trainings are the main support services that respondents received, it is essential to examine the kind of technical trainings provided. The respondents mentioned several kinds of technical trainings including modern orchard management practices, farm hygiene, health and safety precautions, first aid trainings, irrigation methods, value chain management and marketability, leadership and corporate governance, financial management, certification requirements and, farm records and bookkeeping.

The above findings indicate that producers in the study area are receptive to continuous technical trainings on essential themes on mango production, technology and innovation, and marketing as well as sustainable value chain management practices. This indicates that economic downgrading – production inefficiency – could be dulled as the trainings help to increase producers' efficiency and effectiveness in production – economic upgrading (Gerrefi & Lee, 2014). As explained in the conceptual framework (Figure 2), technical training is critical for sustainable economic upgrading. This also gives credence to the institutional theory's assertion that access to institutional support services are crucial for sustainable value chain management (Thoeing, 2011). The ensuing paragraphs concentrate on the general constraints and opportunities for economic upgrading.

General Constraints and Opportunities for Economic Upgrading

Challenges faced by producers have the potential of obstructing their advanced chain entry and upgrading (Gereffi, 1994; Gereffi & Lee, 2014). In order to ensure that producers realize the potential opportunities for economic upgrading, it was essential to examine the specific challenges hindering sustainable and efficient production. The discussion of the constraints and opportunities was centred on finance and resource-related, technological and structural-related and product and process-related challenges and prospects.

The resource-related constraints constitute one of the challenges that impede the operations of mango production. The interviews with the producers showed that they were confronted with different finance and resource-related constraints. The results from the interviews with the respondents revealed that out of 178 multiple responses, inadequate capital (46.1%), lack of credit facility (21.9%), inadequate cold storage facility (12.9%), lack of producer-based insurance schemes (12.4%) and lack of irrigation (6.7%) were the identified challenges relating to the category of finance and resource-related constraints.

The respondents gave several reasons in support of their choice of the inadequate capital and lack of credit services as the most challenging finance and resource-related constraints. These reasons are production activities require huge capital investment and inadequate accessibility to a credit facility. Evidence from the FGD also revealed that inadequate capital is a major constraint confronting producers from enhancing their production activities. The discussants from the FGD (1st April, 2019) remarked that regular availability of water supply is very

important to their production activities. So, most producers want to construct their own artificial irrigation but due to financial inadequacy this is difficult.

This supports the finding of Honja et al. (2016) in Ethiopia that, at the production level, inadequate finance and lack of credit services are the most identified challenges confronting producers from upgrading. This is because upgrading involves the ability of actors to move to sophisticated capital and skill-intensive economic niches (Gerrefi & Lee, 2014) along the value chain. As depicted in the conceptual framework, constraints are the building blocks confronting producers from upgrading.

There was an examination on the perceived potential opportunities that producers could exploit to upsurge economic upgrading. It was revealed from the FGD and the interviews with the key informants that the perceived finance and resource-related potential opportunity is financial inclusion. They indicated that, NGOs such as GIZ and USAID share an interest in financial innovations through their financial advices and trainings, in order to make it easier for producers to participate in the mango value chain businesses. As indicated by a key informant,

> "the continuous financial trainings by the NGO networks can enhance the ability of producers to mobilize commercial finance for their priority projects, connect them with capital markets, and help improve their creditworthiness with financial institutions" (Key informant, SODAD, 2nd April, 2019).

The key informant from MOFA (4th April, 2019) also said, "the financial advices given to producers by the NGOs can provide them a long-term financing agenda

for the mango business". These two submissions demonstrate that producers were privileged to be supported by these NGOs and that, it can serve as a potential opportunity to be exploited. Evidence also shows that, through the financial advice and trainings, the association can assist producers to create a forecast-based financing process to help producers to finance mango production. This shows that opportunities are present for producers in the study area to exploit to allay the finance and resource-related constraints, to propel economic upgrading. This conforms to the suggestion of the mimetic drivers of the institutional theory that mechanisms such as consulting, trainings and participating in industry associations can create opportunities for actors to exploit for upgrading (Aerts et al., 2006).

Technological and structural related constraints also constitute one of the categories of constraints that impede economic upgrading. The interviews with the producers and the FGD revealed different technological and structural related constraints that affect economic upgrading. The results indicated that out of 208 multiple responses related to technological-and structural-related constraints, the most mentioned challenge was estate development encroachment (45.8%), followed by climate change conditions (24.5%), technical knowledge involved in processing (9.8%), theft (8.3%) and inadequate record/bookkeeping (4.8%).

The respondents indicated that frequent court cases concerning estate encroachment, refusal of landlords to lease lands for mango production due to higher money offered by estate developers and fear of losing farmlands in the future were the reasons for considering estate development encroachment as major. It was also evident from the FGD that estate encroachment is a major constraint affecting

production. The discussants (FGD, 1st April, 2019) remarked that most of their members are always in court with estate developers because of land encroachment. Recently, they just won a case against a religious body which wanted to buy about 1500 acres of land belonging to about 70 producers. The association intervened and the producers won the case.

The above submission indicates that real estate development encroachment is actually a major constraint threatening efficiency in production and thus, economic upgrading. It was also revealed that bad weather conditions, bushfires and erratic rainfall, which affect production negatively, were reasons for labelling climate change conditions also as another major constraint.

The opportunities that could be exploited to encumber the identified technological and structural-related constraints were examined. The interviews with the respondents and the key informants revealed that the potential opportunities perceived include securing land rights and proper land sites documentation. They noted that this can provide an enabling environment to stop or mitigate the level of estate encroachment. It was also realized from the key informants that government is keen to initiate measures such as "demarcating agricultural areas across the country to protect it from encroachment" (Key informant, MOFA, 4th April, 2019). This indicates that producers in the study area were aware and ready to exploit perceived opportunities

Furthermore, the FGD and interviews with the key informants revealed that government, processors and exporters share an interest in climate-smart agriculture. It was evident from the key informants interviews that current government policy

dimension on capacity building for producers is focussed on identifying available technologies and innovative practices such as efficient irrigation and climate resilient mango varieties. They pointed out that, this policy action will improve orchards resilience against the impacts of climate change.

This findings demonstrate that there were potential prospects for producers to exploit to stun the major technological and structural related constraints affecting economic upgrading. As indicated in the conceptual framework of the study, existence of perceived opportunities can be exploited to enhance economic upgrading. This supports the argument of the institutional theory that the legitimate adoption of perceived sustainable practices serve as a window for actors to enhance economic upgrading (Sarkis et al., 2011).

Another category of constraints and opportunities analysed was the product and process-related challenges and prospects. With regard to the constraints, the interviews with the respondents showed that out of 215 multiple responses, the major product and process-related constraints were the Bacteria Black Spot (BBS) disease (46.9%) which affects productivity and certification issues (16.3%). The other challenges identified by the respondents include licensing for processing (10.7%), licensing for exporting (8.8%), lack of processing plant in the district (8.3%), high labour cost (6%) and high cost of agrochemical (3%) respectively.

Evidences from the FGD and the key informant interviews also indicate that the Bacteria Black Spot (BBS) disease is a devastating disease which harms efficiency in mango production. Discussants from the FGD (1st April, 2019) reported most mango orchards in the major production zones have been badly

affected by the BBS disease. This particular disease weakens the mango branches and causes the fruits to drop prematurely. It also affects pricing especially the produce for export.

A key informant from MOFA (4th April, 2019) also asserted that, "the BBS disease is a challenging issue especially for output growth and marketing. This disease has even compelled processors to start importing fresh mango fruits from countries such as Brazil, South Africa, Burkina Faso, Senegal, among others". These submissions demonstrate that the Bacteria Black Spot (BBS) disease is another major constraint slowing down sustainable economic upgrading. As indicated in the conceptual framework of the study, major constraints serve as impediments for upgrading.

Potential opportunities which could be exploited to control the product and process-related challenges were analysed. Evidences from the FGD and the key informant interviews revealed that GIZ, USAID and NBSSI are helping mango producers to achieve certification targets by training them to transform locally-tailored farming practices to meet certification requirements. The discussants indicated that, these NGOs are increasingly aiding producers in good agricultural practices that can deliver enhanced productivity and increased profit earnings, thereby helping producers upgrade production operations and be certified with standard certifications.

It was also revealed that the current policy dimension of the USAID Improving Food Safety Systems Project (USAID-IFSSP) is emphasizing how producers can control the BBS disease. Evidence from the FGD and the key

informants further showed that USAID, in collaboration with the Soil and Irrigation Research Centre of the University of Ghana has developed a control manual focused on how to control the bacterial black spot disease (BBS). They indicated that USAID has been organising trainings on the identification of the symptoms of the mango bacterial black spot disease, factors promoting the spread and prevalence of the disease and control of the disease. This indicates that the provision of control manuals and trainings on the BBS disease serve as a potential opportunity for producers to utilize to control the disease.

It is deduced from the above findings that, generally, there are perceived potential opportunities for extenuating the major constraints impeding producers in the study area from economic upgrading. As illustrated in the conceptual framework of the study, the existence of potential opportunities for producers to exploit in order to palliate existing constraints can result in economic upgrading. This also gives credence to the institutional theory's argument that social institutions such as governments, NGOs and industry associations play a critical role in the creation of potential opportunities for chain actors to utilize to dispel existing industrial constraints and thereby, enhancing their operations to achieve cost effective production (Hitt et al., 2004; Wu et al., 2013).

With the identification of the constraints and the opportunities which can be exploited for economic upgrading, it is crucial to ascertain some of the constraints and opportunities that can be exploited for social upgrading. The next section will therefore focus on the constraints and opportunities which producers can exploit to improve the social conditions of their workers.

Constraints and Opportunities for Social Upgrading

This section centres on the fourth research objective of the study which deals with the key constraints and opportunities for social upgrading. Specifically, the discussion of this objective concentrates on motivations to improve working conditions, strategies for enhancing working conditions, constraints impeding social upgrading and general opportunities that can be exploited for social upgrading The theoretical outlook of this section is also reliant on the institutional theory. Descriptive statistics, thematic analysis and documentary analysis were used in analysing this objective.

Motivations to improve working conditions

According to Sen (1999; 2000), social upgrading views workers as both productive and social agents and thereby, highlights their well-being in terms of both their capabilities and entitlements. As a result, it was necessary to examine the labour motivations and benefits which are employed to enhance workers' working conditions. Regarding the examination of whether respondents motivate labour to improve their working condition or not, the results show that all the producers in the study area mentioned that they provide enabling environment to improve workers' working conditions.

With respect to the kind of benefits that they provide to improve their workers' working conditions, the results indicate that out of 407 multiple responses, 32.7 percent related to provision of protective cloths and health insurance, 29.2 percent related to seasonal bonuses, 24.1 percent related to festive bonuses while 4.8 percent related to medical allowance. This demonstrates that the likelihood of

producers motivating their workers in order to improve their working conditions was high (Barrientos et al., 2010).

On the contrary, evidence from the WGDs proved otherwise. Most of the workers indicated that they were not provided with these benefits. For instance, worker group discussants from the Agomeda zone (20th March, 2019) stated that protective cloths are their major challenge. They indicated that they were also challenged with health expenses because of chemical infections mostly after spraying and as well, bear the health bills themselves. In addition, it was revealed that their managers doesn't give them bonuses, and their salaries are been delayed even after the season ends unless managers are pressured.

The worker group discussants from the Ayikuma zone (WGDs, 21th March, 2019) also noted that they don't have health insurance and have complained to their managers to register it for them but have not yet been registered. Also, they don't have any protective cloths. In addition, evidence from the FGD also revealed similar attestations with respect to the working conditions of workers. Discussants from the FGD (1st April, 2019) indicated that it is true that some of their colleagues do not treat their workers as they are supposed to do and at times the farm-hands run away because of the hardships they go through. The results from observation also showed that some workers were not provided with protective cloths. Plate 2 shows some of the workers from the Agomeda zone working without protective cloths.

Plate 2: Some workers from the Agomeda zone working without protective cloths.

Photo Credit: Khiddir (2019)

Plate 2 demonstrates that some workers were not provided with protective cloths. It is deduced from these findings that though producers might have given some benefits and taken actions relating to decent working conditions for farmworkers, it might not be encouraging enough as most farmworkers continue to complain with regard to their working conditions and benefits they receive. This work environment does not promote increase in productivity, as the workers are not motivated to work diligently (Fuseini, 2016).

The above findings correspond with the earlier findings of Oxfam International (2004; 2009) that there are negative implications such as poor working conditions resulting from economic upgrading especially at the production level. This also supports the argument of the institutional theory that actors in powerful positions exert coercive pressures on smaller chain actors such as farmworkers (Kilbourne et al., 2002) which have an impact on the degree of social upgrading or downgrading within a particular value chain network (Cattaneo et al., 2013).

There was also an examination of the barriers that hinder producers from improving workers' working condition. The interviews with the producers and FGD showed that they encounter several challenges which impede them from enhancing workers' working condition. Some of these are inadequate capital, difficulty in getting conducive accommodation and laziness on the part of workers. This is in line with the expected outcome in the conceptual framework of the study. The conceptual framework (Figure 2) suggests that constraints may occur to impede producers from social upgrading.

One of the constraints that impede producers from enhancing workers' working condition was the issue of inadequate capital. Most of the producers (48.7%) in the study area complained that they are constrain with respect to financial capacity in the quest to providing an enabling environment to improve workers' working conditions. They indicated that, this problem usually arise because of poor produce sales and buyers delaying payments. The discussants from the FGD (1st April, 2019) also reported that mostly financial problem stems from buyers delaying payments after picking the produce. It can be deduced from this that the producers are constrained financially due to poor produce sales and buyers delaying payments, which impede their ability to improve workers' working conditions.

The producers also indicated that difficulty in getting conducive accommodation was another problem that affects their pursuit to enhance their workers' working conditions. It was also evident from the respondents and the FGD that producers have difficulty in searching for good accommodation for workers.

According to the focus group discussants, those with workers usually find it very difficult to get a good accommodation nearer their orchards for their workers. In this respect, the discussants (FGD; 1st April, 2019) said that it is very challenging for most of the producers to get a very conducive accommodation around their farms for their farmworkers. The producers are keen in searching accommodation nearer their farms because they want their workers to watch over their farms due to frequent theft cases.

The fact above signifies that in the event that the producers are unable to arrange for good accommodation for workers, they may be compelled to lodge in poor accommodations. In such an instance, workers will be experiencing poor working condition with respect to measurable standard for conducive accommodation.

Additionally, there was a constraint regarding laziness on the part of workers. The focus group discussants noted that this was considered a constraint because producers are hesitant to invest their resources in workers who they think are not productive. They indicated that when workers are unable to implement the orchard management practices they have been taught continuously, producers become displeased. Since producers were confronted with a number of challenges that impede them from improving workers' working condition, it was important to identify those constraints that were major and the reasons for labelling them as such.

Table 13 presents the summary of the major constraints that impede social upgrading. The results indicate that out of 152 multiple responses, the most mentioned constraints were inadequate capital (48.7%) and laziness on the part of

workers (44.1%). Only a few responses (7.2%) related to difficulty in getting conducive accommodation.

Table 13: Summary of Major Constraints impeding Social Upgrading

Constraints	Number	Percent
Inadequate capital	74	48.7
Laziness on the part of workers	67	44.1
Difficulty in getting conducive accommodation	11	7.2
Total	152	100

Source: Field Survey Data, Khiddir (2019)

*More than the population size due to multiple responses

The respondents gave several reasons for labelling the constraints in Table 13 as major. Some of the reasons are inability to boost productivity and motivate workers, market prices determine how workers are motivated and low productivity as a result of negligence on the part of workers. Evidence from the FGD also showed that producers required adequate financial resource in order to effectively enhance workers' working conditions. The discussants from the FGD (1st April, 2019) noted that inadequate capital is a primary constraint impeding social upgrading because the availability of adequate capital will be essential to boost and motivate workers.

Without potential opportunities to allay the identified constraints, there is a likelihood of social downgrading which impinges on healthy work environment and thereby affecting the working conditions of the producers and more importantly the workers (Bernhardt & Milberg, 2011). The ensuing paragraphs therefore focus on identifying the opportunities that can be exploited to propel social upgrading.

General Opportunities for Social Upgrading

Since constraints hindering producers from improving workers' working conditions can result in social downgrading. It was crucial to ascertain the existing potential opportunities through which producers can exploit to address these constraints. The interviews with the producers and key informants revealed several available strategies that producers could utilize for social upgrading. Some of these strategies include enrolling workers on to the National Health Insurance Scheme (NHIS), enforcing the Global GAP standard policy dimension on workers' health and safety and association's support programmes. These findings indicate that there are certain available strategies that producers could utilize for social upgrading. As held by the institutional theory, social upgrading occurs because of the availability of institutional strategies instituted by normative pressures, drive actors to ensure decent work (Amaeshi et al., 2008; March & Olsen, 1989).

It emerged from the FGD that the National Health Insurance Scheme (NHIS) is a principal social assistance scheme that producers can utilize to improve the health conditions of their workers. They indicated that enrolling workers on to the scheme will ensure their access to healthcare and also help in reducing the cost of medical bills. The discussants from the FGD (1st April, 2019) indicated that the health insurance scheme is a good initiative to help not only the workers improve their health conditions but they the producers as well and can also help reduce the cost of our medical bills. This implies that the availability of the national health insurance scheme serves as a potential prospect for producers to embrace in order to help improve their workers' health conditions.

Enforcing the Global GAP standard policy dimension on workers' health and safety was another potential opportunity identified. Under the period of review, the study found that one key policy dimension of the Global GAP standard is the worker health and hygiene policy which could be enforced to enhance workers' working conditions. The policy covers issues such as worker safety during lifting and chemical application, proper hygiene, conducive accommodation, availability of potable water, first aid and emergency protocols. It was revealed that producers are required to produce a written policy manual for auditors to review and observe in order to keep track of all the working conditions of workers. Thus, workers' working conditions can be enhanced through the enforcement of the worker health and hygiene policy of the Global GAP certification standard.

Another potential opportunity related to social upgrading was association's support programmes. The focus group discussants indicated that the association in collaboration with Bomart limited, an exporting company, is implementing a project called the Bomart Fair Trade Project. They pointed out that, the project is about enrolling producers on to the Fair Trade Certification. Evidence from documentary reviews showed that the approach to Fair Trade Certification enables actors to produce in line with rigorous social, economic and environmental standards so that the consumer can make a difference in the lives of workers. It also emerged from the review that the Fair Trade Certified seal helps to ensure basic human rights for both producers and workers. The certification seal ensures that producers and workers earn extra income with every sale.

The above findings suggest that the Fair Trade certification seal serves as a social obligation which enforces the integration of new rules and legitimate practices among value chain actors to ensure social upgrading (Sarkis, Zhu & Lai, 2011). As indicated in the conceptual framework of the study, social standards may serve as opportunities along the value chain for actors to exploit, to overcome constraints and ensure social upgrading. This supports the postulation of the institutional theory that normative pressures drive enterprises to be more environmentally aware, and argue that standards are needed to understand new social rules such as ethical values in order to ensure decent work for social upgrading as well as response to environmental issues (Ball & Craig, 2010).

However, the key informant interviews revealed that, with the exception of NHIS, there is no government policy that is particularly focused on social upgrading. They indicated that government anticipates that productivity growth will transcend to improving the economic and social conditions of both producers and workers. On the contrary, the study found that as productivity improves, the working conditions of workers wane. This gave credence to the institutional theory's assertion that purely focusing on economic influences to govern value chain actors may impinge on the healthy work environment of downstream actors such as workers. The next chapter concentrates on the summary and conclusions of these analyses and presents recommendations based on the findings and conclusions.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This concluding chapter presents the summary of the study, conclusions, and recommendations. The summary comprises the research processes and key findings. Conclusions were drawn from the key findings while recommendations were based on the findings and conclusions. It further presents limitations of the study and the suggested areas for further research.

Summary

The study examined the economic and social upgrading in the mango value chain for smallholder producers. It was guided by four principal objectives: to describe the nature of the mango value chain, analyse the upgrading activities in the mango value chain, ascertain the constraints and opportunities for economic upgrading and the constraints and opportunities for social upgrading in the mango value chain.

A mixed-method approach which tilted towards the quantitative approach was adopted for the study, while the cross-sectional study design was used to guide the study. The census approach was employed to select all 133 farmers while purposive sampling was used to select two key informants and four worker groups based on the production zones. Interview schedule, interview guide, group discussion guide, focus group discussion guide and observation guide were the instruments used for data collection. The analysis of data included the application of descriptive statistics, chi-square test of Independence, margin analysis and thematic analysis.

Key Findings of the Study

Based on the results and discussion of the study, the key findings based on the research objectives are presented. The first objective dealt with the nature of mango production, and the main findings were as follows:

1. The study identified four types of land holding arrangements through which producers acquire land for mango production. These include direct ownership through inheritance and/or direct purchase (57.1%), leasehold (22.6%), family lands (13.5) and through concession (6.8%). Direct ownership constituted the major form of land holding arrangements by which producers engaged in mango production. Holding arrangements for family lands and concession constituted the sharing of produce by two-third for the producer and one-third for family heads or the allodial landholder(s)
2. The total production area used for mango plantation was 2,788.10 acres. The median orchard size was 14 acres (mean = 20.96; std. dv. = 26.20; Skewness = 3.695) with a Quartile Deviation of 9.50 acres while the minimum and maximum orchard size were two and 190 acres respectively. The largest production area was Agomeda zone (49.66%), while the lowest production area was the Shai-Hills zone (1.35%).
3. Keitt, Kent, Palmer and Haden were the mango varieties grown by producers. Majority (60.9%) of the producers produced both the major improved mango varieties, Keitt and Kent. Only few producers were producing all the four varieties. The Haden variety had been introduced recently and thus has not yet matured. Government is piloting about 24

different mango varieties to serve as a potential market for the mango commodity. There was a significant difference at the 0.05 level of alpha (X^2 = 46.473; df = 15; p-value = 0.000) in the choice of mango varieties according to production zones.

4. About 46.6% of the respondents adapted the mixed cropping approach, intercropping (30.1%) and sole planting (23.3%) respectively in their mango plantation. Some of the crops that respondents normally mix or inter-crop with the mango plantation include: maize, beans, yam, plantain and/or okro. The key informants indicated that mixed or inter-cropping, during the early maturity stage of the mango trees, was a recommended practice not only for the supplementary income earned but it also serves as a cover to protect the plantation from pests, weeds and wind distractions.
5. The median variable costs of production inputs was GH¢ 8,900.00 (Mean = 14674.62; Std. Deviation = 19864.76; Skewness = 3.859) with a quartile deviation of GH¢ 5,488.00 while the minimum and maximum costs in a production year were GH¢ 510.00 and GH¢131,100.00 respectively.
6. The median output quantity level was 25 tons (Mean = 50.29; Std. Deviation = 124.54; Skewness = 7.71) with a quartile deviation of 15 tons while the minimum and maximum tons in a production year were zero and 1,260 tons respectively. Overall, respondents invest GH¢ 1,951,724.00 to produce about 6,688.20 tons of fresh mango fruits, in a production year.
7. The median profit level was GH¢ 26,500.00 (Mean = 54281.43; Std. Deviation = 105470.63; Skewness = 4.947) with a quartile deviation of GH¢

12,775.00 while the minimum and maximum tons were zero and GH¢ 678,000.00.

8. Mango production in the district was highly efficient and profitable as most of the producers were able to obtain more than 63 percent returns on their investment. The median profit margin was 0.6300 (Mean = 54281.43; Std. Deviation = 0.5938; Skewness = - 0.702) with a quartile deviation of 0.16. The highest profit margin was 95 percent as compared to a minimum of zero percent.

The second objective was related to the upgrading activities in the mango value chain for smallholder producers. The following key findings emerged:

1. Nearly 60 percent (60.2%) of the respondents indicated that they were Global GAP certified producers while the rest (39.8%) noted that they were not. However, out of the 80 producers who were Global GAP certified, only 17 of them were sanctioned for the new production season, while the rest (63) were embargoed due to non-compliances.
2. The Global GAP certification guidelines ensures good agricultural practices, focusing on food safety, environmental quality, worker health and safety, and traceability on the farm. Producers have two options to obtain certification under the Global GAP: they can apply individually or apply collectively for a producer group certificate. It offers producers more demand reliability in terms of volume of produce and/or attract higher prices. However, it entails yearly costs for internal and external inspections by certification auditors.

3. Different types of Good Agricultural Practices (GAP) certifications that producers can adopt in order to serve other distinct market segments include: FAIRTRADE, harmonized GAP, Produce Good agricultural Practices (EurepGAP), Group GAP, ORGANIC and GREEN Label.
4. The respondents produced for all the three market segments; processing, export and local markets, respectively. Blue Skies Limited and HPW Limited are the processing companies while Bomart Limited, Golden Limited, Valley Fresh Limited, Bassam Limited and Asare and Co. Limited are exporting companies. The majority (82.7%) were not able to export their produce. Producers who do not target the export market do not necessarily require to store their produce
5. Largely, the spot-market transactions is the principle market governance structure. Produce are sold in boxes/crates and then weighed and transported either through buyers' own vehicles, commercial vehicle and/or both. However, producers do not bear the cost of harvesting and transportation.
6. The production level generates sizeable employment however, such opportunities for females were quite absent. More than four-fifth (96.6%) of the permanent workers are hired through agents. In addition, permanent workers are mostly hired from either Northern Ghana or North Togo. Workers were paid lower than the legislated monthly minimum wage rate of Gh₵ 351.45 pesewas however, they were working within the maximum legislated eight working hours for farmworkers. Absorbed household

labourers were not paid a predetermined wage rate per month but rather given an amount of money, customarily called 'Che-fa'. Permanent workers were paid accumulatively at the end of each harvesting season.

The third objective ascertained the key constraints and opportunities for economic upgrading in the mango value chain for smallholder producers. The main findings were as follows:

1. About three-fifth (60.2 %) of the respondents were aware of specific market prospects that could be taken advantage of to propel economic upgrading. These respondents perceived processing market (48.7%), high demand for fresh mango fruits in major cities (21.1%) and export market (17.4%) as the main market avenues that could be exploited. Respondents perceived capital requirement (52.8%) and difficult export requirements (31.5%) as the key reasons accounting for their inaccessibility to the various identified market avenues.
2. Respondents indicated that self-financing (55.2%), provisions from family and friends (19.1%) and bank loans (17.4%) are the main sources through which they finance their mango production.
3. About 97 percent of the producers had access to technical training on mango production, while the rest covered extension services, production manuals, certifications and provision of logistics. This was affirmed by the focus group discussants and the key informants. However, technical training was the support service that was provided regularly. The producers perceived non-governmental organisations as the major support service provider. The

producers receive technical trainings on modern orchard management practices, farm hygiene, health and safety precautions and first aid trainings. Other technical trainings include irrigation methods, value chain management and marketability, leadership and corporate governance, financial management, certification requirements and, farm records and bookkeeping.

4. The major challenges producers encountered in the process of economic upgrading include estate development encroachment, Bacteria Black Spot (BBS) disease and climate change conditions. Inadequate capital, lack of credit facility and certification issues were also identified as major challenges.
5. The major identified opportunities producers could exploit to propel economic upgrading were securing land rights, proper land sites documentation and demarcating agricultural areas across the country to protect them from encroachment. Other major identified opportunities include provision of control manuals and trainings on the BBS disease, NGOs' policy dimensions focused on climate-smart agriculture, financial inclusion and forecast-based financing process.

Objective four ascertained the key constraints and opportunities for social upgrading in the mango value chain. It found that;

1. Majority (62.1 %) of the farmworkers continued to complain with regard to their working conditions and benefits they received.

2. The respondents perceived inadequate capital (48.7%), laziness on the part of workers (44.1%) and difficulty in getting conducive accommodation (7.2%) as the barriers hindering them from improving workers' working conditions.
3. Strategies that producers could utilize for social upgrading include: enrolling workers on to the national health insurance scheme (NHIS), enforcing the Global GAP standard policy dimension on workers' health and safety and enrolling into the fair trade certification scheme. There is no government policy principally focused on social upgrading.

Conclusion

The nature of the mango value chain shows that mango business, at the production level, is one of potential fruit crop which has a significant contribution to the livelihood of small scale producers and creates business and employment opportunities for many firms and commercial entities. Producers acquire lands for mango production through direct ownership, family lands, leasehold and concession. The mango varieties grown by producers included keitt, kent, palmer and/or haden. The study further revealed that producers mix or inter-crop maize, beans, yam, plantain and/or okro with the mango orchards. The study identified producers, farmworkers, hiring agents, local market women, processors and exporters as direct actors along the mango value chain. The indirect actors of the chain in the study area are both governmental agencies such as the District Agricultural Directorate, Ministry of Food and Agriculture (MOFA), NBSSI and MLGRD and NGOs such as USAID, GIZ and FAGE.

Generally, the upgrading activities in the value chain are enrolment on to the Global GAP certification scheme, focus placed on the processing market and engaging in spot-market transactions. Producers were experiencing economic upgrading as they had progressively adopted most of the upgrading practices, at the production level, such as land improvement, use of value added seedlings, modern orchard management, skill training and use of box/crate packaging. Some producers have transcended along the chain to export on their own. However, significant improvements are required to ensure social upgrading at the production level.

The key constraints for economic upgrading are encroachment by estate developers, Bacteria Black Spot (BBS) disease, climate change conditions, inadequate capital, lack of credit facility and certification issues. On the other hand, the key opportunities for economic upgrading include securing land rights, proper land site documentation, demarcating agricultural areas across the country to protect it from encroachment, provision of control manuals and trainings on the BBS disease, NGOs' policy dimensions focused on climate-smart agriculture, financial inclusion and forecast-based financing process.

The key constraints for social upgrading are inadequate capital, laziness on the part of workers and difficulty in getting conducive accommodation. These are evident in the socially downgraded nature of the decent working outcomes of workers – such as wage levels, accommodation and health and safety. However, there are opportunities for social upgrading such as enrolling workers on to the national health insurance scheme (NHIS), enforcing the Global GAP standard

policy dimension on workers' health and safety and enrolling into the fair trade certification scheme.

Recommendations

From the key findings and conclusions drawn, the following targeted recommendations were made:

The Government of Ghana should:

1. Scale-up capacity building initiatives such as trainings, manuals and tools geared towards attitudinal and behaviour change skills. The district crop directorate, MOFA and the National Commission for Civic Education (NCCE) could embark on intensive education to create awareness concerning decent work. This is important to help producers appreciate the reasons why they should be keen on ensuring decent and healthy working environment for workers.
2. Create awareness and sensitize workers through sensitisation workshops, and build their capacity in order to enable them know their entitlements as farmworkers and demand accountability from employers. The above strategies are expected to enable workers to engage better with their employers to improve their working conditions
3. Effectively collaborate with its ministries/directorates (MOFA, agricultural directorates, etc.) to facilitate the initiation of well documented policies on mango production. This has become important because of the profitability of mango production. This is required to attract potential investors and also

open up potential windows to foster relationship between producers and financial institutions.

4. Facilitate the enactment of laws and regulations to protect producers and all land buyers in general as well as enforcing the prosecution of all land encroachers. This is necessary to ensure the protection of farmlands.
5. Collaborate with NGOs such GIZ and USAID to step up action on building climate resilient mango varieties. This is essential to help mitigate the effects of climate change on productivity.

The producers in collaboration with the mango grower association should:

6. Forge partnership with other mango farmer-based groups and/or buyers to co-create a financial mango value chain scheme to address financial and market inefficiencies. This is essential because when relationships are forged and adapted through this collaborative partnerships, a relatively small investment can trigger a more significant returns and gains.

Limitations of the Study

A major limitation of the study is the fact that I focused on only economic and social upgrading for smallholder producers along the mango value chain. Comprehensive data on the three major areas of sustainability – economic, social and environment – would be required in order to examine an overall status of upgrading along the mango value chain for smallholder producers. Sustainability area of environment was excluded from the study.

Suggested Areas for Further Studies

Based on the limitations of the study, there is the need for further studies to examine:

1. The environmental upgrading in the mango value chain for smallholder producers; and
2. The impact of real estate development on the mango production business.

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APPENDICES

APPENDIX A

INTERVIEW SCHEDULE FOR MANGO PRODUCERS

Dear Cherished Respondent,

This study is on ***"Economic and Social Upgrading in the Mango Value Chain for Smallholder Producers in Shai-Osudoku District in the Greater Accra Region of Ghana"***. This is an academic exercise in partial fulfilment of the requirements for the award of a Master of Philosophy (MPhil) degree by the University of Cape Coast, Ghana. Please note that whatever information you provide will be treated confidentially and used for only its intended purpose. Your voluntary participation is appreciated. There are no risks involved in taking part in this study. As a voluntary respondent, you are not required to answer any question that you do not wish to respond, and you can withdraw at any time during the process. Your answering of this interview schedule will indicate your consent to participate in this study. Thank you!

Instruction: *Please, for each question in the various sections indicate the chosen option by ticking the most appropriate answer(s) and fill in (where applicable)*

BASIC INFORMATION

Name of interviewer..... Date of interview.....

Name of mango producer..... Contact Number.....

Name of community.....

Section 1: Background Data of Producers

1. Sex: [1] Male [2] Female

2. Age?.....

3. Marital status i) Single [ ] ii) Married [ ] iii) Divorced [ ] iv) Widowed [ ]

4. Educational background? i) No formal education [ ] ii) Primary [ ] iii) JSS/Middle School Leaving Certificate [ ] iv) SSS/technical education [ ] v) Tertiary [ ] vi) Other, specify ……..

5. Household size? ……..

6. How many years have you been actively engaged in mango production?

.....

7. What is your main occupation?.....

8. What other occupation are you engaged in? .....

……

Section 2: Nature of Mango Production

9. How did you go about acquiring land for the mango production? ……...

……

……

10. What main varieties of mango do you produce? i) keitt [ ] ii) Kent [ ] iii) Palmer [ ] vi) Other, specify.....

10a.Why did you choose such variety (ies) ?.....

……

11. What planting systems to do you practice? i) Mixed cropping [ ] ii) intercropping [ ] iii) Other (specify).....

11a. Why did choose to use of this systems? ……

……

Production Information

Answer the following questions pertaining to production variables.

12a. Land

Item	**No. of Acreages**	**Cost per Acre**	**Total Cost**	**No. of Holdings (*if any*)**
i. Orchard size				
ii. Land preparation				

12b. Where do you purchase your inputs from? …….

12bi. Operational expenses

Item	**Cost**
Planting materials	
Fertilizers	
Agrochemicals	
Farm implements	
Labour	
Transportation	

12c. How many mango trees are you recommended to grow per acre?.....

12ci. Do you follow this recommended pattern? Yes [ ] No [ ], why

……

13. How do you harvest your mango fruits? …….

……..

13b. Why the particular choice of the method of harvesting?.....

……

13c. How much produce are you currently getting from your orchard?

Season	Quantity (tons)	Total Price (Gh¢)
Major		
Minor		

Section 3: Upgrading Activities

14. Do you have Global GAP certification to produce mango? i) Yes [ ] ii) No [ ]

14a. If no, indicate the reason……

……...

If yes, answer the following (25b-25c):

14b. What are the expectations that a producer must fulfil before given the Global GAP certification? ……

……

14c. Who sets the certification requirements?.....

15. Which market do you produce for? i) local market [ ] ii) Export market [ ] iii) Processed market [ ] iv) All the above [ ] Why? …….

……..

16. Based on your answer to Qn13c, what share of production is sold in each of these market channels (in tons)?

i) Local market……. ii) Export market……..

iii) Processed market…….

17. How do you market your produce? Spot-market transaction [ ] hierarchical [ ] Other, specify …… …

……..

18. What informs the prices of the mango produce? ……

…….

19. How is the produce sold? i) in Boxes/ Crates [ ] ii) in Sacks [ ] iii) By Weight [ ] iv) Other, specify…….

20. How much do you sell per produce to?

Markets	**Unit price/kg**	
	Major season	**Minor season**
Exporters		
Processors		
Local market		

21. Have you been able to export any of your produce on your own? i) Yes [ ] ii) No [ ]

21a. If no, why ……..

21b. If yes, what proportion did you export? ……..%

22. Is the export market easily and readily accessible? i) Yes [ ] ii) No [ ] Explain your Answer.....

…….....

23. Is there a storage facility (ies) available? Yes [ ] No [ ].

23a. If yes, do you have access to it for your produce? i) Yes [ ] ii) No [ ]

23b. If no, why? ……

24. By what means do you transport your produce to the market? i) own vehicle [ ] ii) commercial vehicle [ ] iii) By head [ ] iv) Other (specify).....

24. Have you thought of the following upgrading activities?

No.	Upgrading Activities	Tick		Reason
		Yes	No	
A	Land amelioration			
B	Value added seedlings			
C	Modern orchard management			
E	Skill training			
F	Packaging			
G	Other, specify			

24a. Based on your answer to Qn24, which of them have you actually employed? i) Land amelioration ii) Improved seedlings iii) Techniques iv) Production methods v) Skill training vi) Packaging vii) Other, specify ……..

Labour

Answer the following questions pertaining to labour variables.

26. What arrangements do you make to hire your workers? ……...

……..

……

Types	Source	No. of Persons	Working Hours	Days worked per week	Period engaged (days/Yrs)	Wage/person/day (Gh¢)
Family	Males					
	Females					
Hired: Permanent Causal/ Temporary						

27. Do you arrange trainings for the workers? Yes [ ] No [ ]

27b. If no, why? ……..

……..

27c. If yes, what type of training did you arrange for the workers? ……

…….

27d. can you elaborate on the content of the type of training? ……

…….

28. What benefits such as medical insurance, allowance and protective cloths are available to the workers? ……..

……

29. What do you put in place to ensure work safety? …….

……

Section 4: Constraints and Opportunities for Economic Upgrading

30. What are some of the specific market prospects that can be taken advantage of? ……

……

31b. Are there barriers for accessing these markets? Yes [ ] No [ ]

31c. If yes, please, give examples .....……

…… …… ……

32. How do you finance your mango production? …… …

……

……

33. Do you receive any support services? i)Yes [ ] ii)No [ ]

Explain your answer……..

……

……

34. Have you ever received any training relating to mango production before? i) Yes [ ] ii) No [ ]

34a. If Yes, who provided the training..... i) Government [ ] ii) NGOs [ ] iii) FBOs (mango based) [ ] iv) Fellow farmers [ ] v) others, specify.....

34b. What type of training have you received? ……

……..

35. Are there any strategies to boost output growth in the mango industry? i) Yes [ ] ii) No [ ]

35a. If yes, please mention some of them that you know ……

…..……

……

35b. Are you able to apply them? i) Yes ii) No Why?.....

……

36. What challenges do you face in the process of improving your mango production? ……...

……

……

36a Which of these are major challenges? ……...

……

……

36b. Why do you consider those challenges as major? ……...

……

……

36c. How do you plan to overcome these challenges? ……

……

……

Section 5: Constraints and Opportunities for Social Upgrading

38. What are you doing to enhance you and your workers' working condition? …

……

……

38a. Are there schemes that you can take advantage of to enhance you and your workers' working condition? Yes [ ] No [ ]

38b. If yes, can you mention some of them ……

……

……

38b. Which institutions or bodies make these schemes available? ……

……

39. Are there barriers hindering you from improving you and your workers' working condition? Yes [ ] No [ ]

39a. If yes, can you mention them? ……

……

39b. Which of these are major challenges? ……..

……

……

39c. Why do you consider those challenges as major? ……...

……

……

39d. How do you plan to overcome these challenges? ……

……

……

40. What are some of the prospects you can make use of for improving you and your workers' working conditions? ……...

……

……

Thank you for your time and participation

APPENDIX B

DISCUSSION GUIDE FOR FARM-WORKERS

Guide No.: ..... Date: ……

Name of Community: …… Start Time: …… End Time……

Contact:…….

Introduction

1. Introduction of the researcher, purpose of the research and importance of the input of the interviewee

Section 1: Upgrading Activities, Contract Arrangement

2. Contracting arrangement between worker and the producer. Probe: salaries, allowance, accommodation and feeding.
3. Activities undertaken in the farm. Probe: years in mango farming activities
4. Working condition. Probe about protective cloths, safety issues and medical insurance.
5. Worker training programmes
6. Future plans. Probe: desire to own mango orchard and reason, change job and why?
7. Challenges Worker is facing. Probe about any other comment.

Thank you for your time and participation

APPENDIX C

OBSERVATION CHECKLIST/GUIDE

No.	Issue to Observe	Response Category		
		1) Confirmed		2) Not confirmed
		Good	Not Good	
A	Equipment use			
B	Protective cloths			
D	Health insurance card			
E	Farm environment			
F	Fruit Appearance			

APPENDIX D

INTERVIEW GUIDE FOR KEY INFORMANTS

Guide No.: ..... Date: ……

Name of Respondent: …… Start Time: …… End Time……

Contact:……. Institution: …….

Introduction

1. Introduction of the researcher, purpose of the research and importance of the input of the interviewee
2. Briefing about the interview length and topics of discussion
3. Introduction of the interviewee and the institution

Current Role in Upgrading the Mango Industry

4. What role is this institution playing in the mango industry?
5. What are your key activities in this respect?
6. Which actors are the main targets of this institution in the mango value chain for upgrading purpose?
7. What are the key constraints this institution is facing in achieving the objectives in this respect?
8. How can these constraints be addressed?

Potential Role in Upgrading the Mango Industry

9. How do you currently see economic upgrading in the mango industry?
10. How do you currently see social upgrading in the mango industry?

11. What are the issues related to economic and social upgrading of the industry?
12. What are some of the current strategies being implemented by this institution to help producers to enhance economic and social upgrading of production?
13. In what way can this institution improve economic upgrading of the mango value chain (particularly the production node) in Ghana such as value addition, standards and certifications, innovation, training, profitability and exportation?
14. In what way can this institution improve social upgrading of the mango value chain (particularly the production node) in Ghana such as decent employment, labour training, safety and gender balance?
15. What type of key constraints do you foresee in this respect?
16. What type of support do you need to enable you to play an effective role in economic and social upgrading of the production node of the mango value chain?

Attention for Shai-Osudoku District

17. Which districts are your priority areas for mango production?
18. How important and economically viable is mango production in the Shai-Osudoku District?
19. Are there any special programmes for this district?

Thank you for your time and participation

APPENDIX E

INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSION

Name of Association:..... Date:……

No. of Participants:…… Start Time: …… End Time……

Association's Contact:…….

In a coordinated manner, please respond to the following Questions. Thank you.

Nature of mango value chain

1. How important and economically viable is mango production in the Shai-Osudoku District? Explain your answer. Probe: Population dynamics in the mango farming business
2. Land acquisition for mango production in the district
3. Mango varieties commonly grown by mango producers in the district
4. The main purpose and activities of the association
5. The most important actors along the mango value chain? Probe about functions.

Upgrading Activities

6. Probe: Mango productivity in the district
7. In what way has the formation of the mango farmers association affected production performance of the individual farmers?
8. Probe: End-market characteristics and governance structure
9. Upgrading activities: probe about economic upgrading issues such as value addition, standards and certifications, innovation, profitability,

training and exportation. Also, probe about social upgrading issues such as decent employment, labour training, safety and gender balance.

Constraints and Opportunities for Economic Upgrading

10. What are some of the prospects you think are available for the farmers to exploit to propel economic upgrading?
11. Where do the producers get their financing from? Probe about the satisfactory nature of the financing.
12. Do you know of any government support in terms of policies and strategies to boost production of mango
13. How would you assess the performance of extension service delivery on the production level of producers?
14. What role is the association playing in terms of training and other assistances given to the producers?
15. What are some of the constraints facing mango production in the district? Probe about the major constraints and reasons for them being major.
16. What is the association doing to assist the producers in overcoming these constraints?

Constraints and Opportunities for Social Upgrading

17. Do you have knowledge on the contract arrangement between the producers and their workers? If yes, probe about working condition
18. What is the association doing to help producers enhance the working condition of themselves and their workers?

19. Do the association know of any risk management or social protection schemes that producers can take advantage of to enhance the working condition of themselves and their workers? Probe: if yes, mention some of them. If no, what is the association doing in this regard?
20. Do you know of any barriers hindering the producers from improving themselves and their workers' working condition? Probe: If yes, highlight them, the major constraints and reasons of them being major.
21. How do the association plan to assist the producers overcome these constraints?
22. What are some of the prospects the producers can make use of for social upgrading?

Thank you for your time and participation!

APPENDIX F

OCCUPATIONAL DISTRIBUTION OF RESPONDENTS

Main	Other Occupation									
	Mango Production		Public Servant		Trading		Corporate Servant		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Mango Production	57	42.9	1	0.8	7	5.3	-	0.0	65	48.9
Public Servant	29	21.8	-	0.0	-	0.0	-	0.0	29	21.8
Trading/ Artisans	25	18.8	-	0.0	-	0.0	-	0.0	25	18.8
Corporate Servant	14	10.5	-	0.0	-	0.0	-	0.0	14	10.5
Total	125	94.0	1	0.8	7	5.3	-	0.0	133	100.0

Source: Field Survey, Khiddir (2019)

APPENDIX G

MAP OF THE DANGME WEST ASSOCIATION MANGO FARMS (DAMFA).

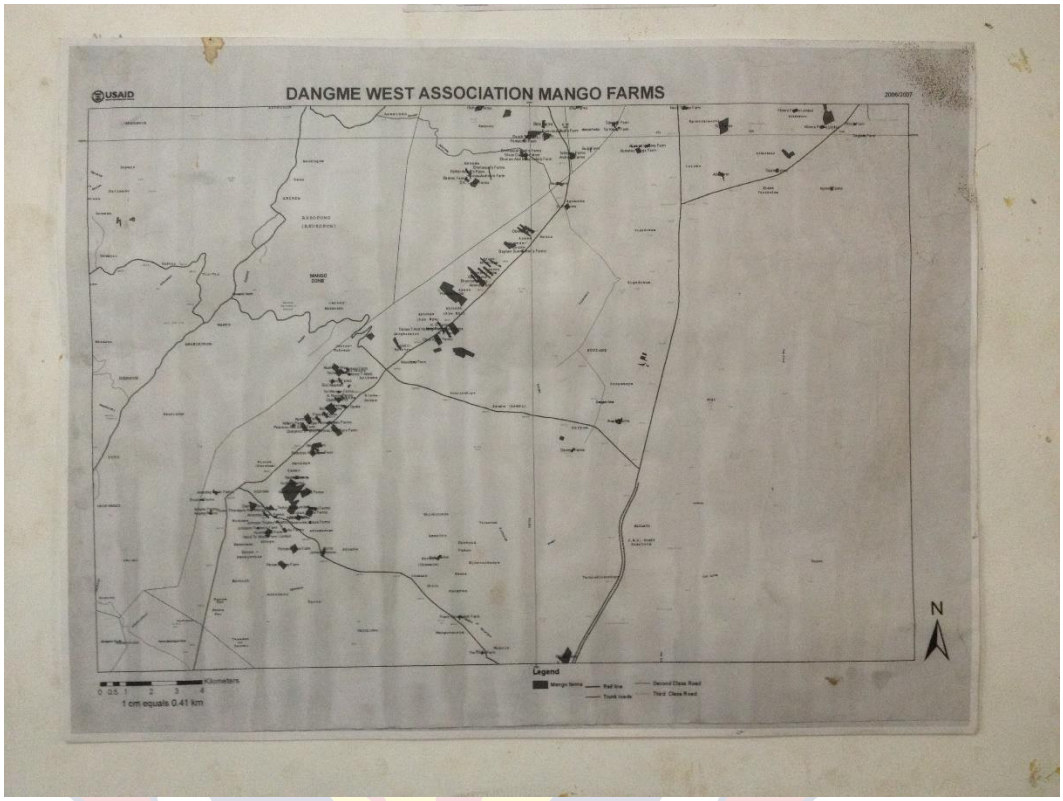

Figure 3: Dangme West Association Mango Farms

Source: Field Survey Data, Khiddir (2019)

APPENDIX H

MANGO VARIETIES GROWN BY PRODUCTION ZONES

Mango Varieties produced	Mango Production Zones								Total	
	Agomeda Zone		Ayikuma Zone		Shai-Hills Zone		Kongo Zone			
	N	%	N	%	N	%	N	%	N	%
Keitt	7	5.3	10	7.5	1	0.8	1	0.8	19	14.3
Kent	6	4.5	3	2.3	0	-	0	-	9	6.8
Haden	0		0		1	0.8	0	-	1	0.8
Keitt and Kent	41	30.8	33	24.8	2	1.5	5	3.8	81	60.9
Keitt, Kent and Palmer	13	9.8	8	6.0	0	-	0	-	21	15.8
All the Above	0	-	1	0.8	0	-	1	0.8	2	1.5
Total	67	50.4	55	41.4	4	3.0	7	5.3	133	100

X^2 = 46.473; df = 15; p-value = 0.000; Cramer's V = .341

APPENDIX I

SUMMARY STATISTICS OF VARIABLE COSTS OF PRODUCTION INPUTS PER ACRE OF RESPONDENTS BY, PRODUCTION ZONES AND SEX

Variable Costs of Production Inputs Per Acre of Respondents by Production Zones

Production Zones	N	Min (GH¢)	Max (GH¢)	Sum (GH¢)	Median (GH¢)	Mean (GH¢)	Std. Dv. (GH¢)	Skewness	
								Stat	Std. Error
Agomeda	67	154.55	3566.67	63161.49	693.33	942.71	779.18	1.640	.293
Ayikuma	55	82.22	3454.55	50404.46	839.29	916.44	656.82	1.709	.322
Kongo	7	316.84	1048.93	4730.14	570.00	675.73	287.86	0.231	.794
Shai-Hills	4	533.33	1590.00	5129.33	1503.00	1282.33	503.17	-1.912	1.014
Total cost	133	82.22	3566.67	123425.42	742.00	928.01	705.00	1.668	.210

Variable Costs of Production Inputs Per Acre of Respondents by Sex

Sex	N	Min (GH¢)	Max (GH¢)	Sum (GH¢)	Median (GH¢)	Mean (GH¢)	Std. Dv. (GH¢)	Skewness	
								Stat	Std. Error
Male	116	82.22	3566.67	105105.66	687.07	906.08	697.00	1.717	.225
Female	17	154.55	3112.50	18319.77	983.33	1077.63	761.89	1.556	.550
Total	133	82.22	3566.67	123425.42	742.00	928.01	705.00	1.668	.225

Source: Field Survey, Khiddir (2019)

APPENDIX J

PROFIT-MARGIN OF RESPONDENTS BY; PRODUCTION ZONES AND SEX

Profit-margin of respondents by Production Zones

Production Zones	N	Profit-Margins						Skewness	
		Min	Max	Sum	Median	Mean	Std. Dv.	Stat	Std. Error
Agomeda	67	0.00	0.94	39.94	0.6200	0.5961	0.21933	-0.714	0.293
Ayikuma	55	0.00	0.95	31.99	0.6400	0.5816	0.24360	-0.620	0.322
Kongo	7	0.16	0.84	4.35	0.6500	0.6214	0.22527	-1.681	0.794
Shai-Hills	4	0.50	0.86	2.70	0.6700	0.6750	0.18628	0.040	1.014

Profit-margin of respondents by Sex

Sex	N	Profit-margins						Skewness	
		Min	Max	Sum	Median	Mean	Std. Dv.	Stat	Std. Error
Male	116	0.00	0.95	67.59	0 .6150	0.5827	0.23547	-0.645	0.225
Female	17	0.43	0.94	11.39	0.6500	0.6700	0.14556	0.152	0.550

Source: Field Survey, Khiddir (2019)

APPENDIX K

GLOBAL GAP CERTIFICATION BY PRODUCTION ZONES OF RESPONDENTS

Global GAP	Production Zones									
	Agomeda		Ayikuma		Kongo		Shai-hills		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	40	59.7	32	58.2	5	71.4	3	75.0	80	60.2
No	27	40.3	23	41.8	2	28.6	1	25.0	53	39.8
Total	67	100	55	100.0	7	100	4	100.0	133	100.0

Source: Field Survey, Khiddir (2019)

$X^2 = 0.834$; df = 3; p-value = 0.841; Cramer's V = 0.079

APPENDIX L

GLOBAL GAP CERTIFICATION BY SEX

Global GAP certification	Sex				Total	
	Male		Female			
	N	%	N	%	N	%
Yes	68	58.6	12	70.6	80	60.2
No	48	41.4	5	29.4	53	39.8
Total	116	100.0	17	100.0	133	100.0

Source: Field Survey, Khiddir (2019)

$X^2 = 0.886$; df = 1; p-value = 0. 347; phi = -0.082

APPENDIX M

GLOBAL GAP CERTIFICATION BASED ON EDUCATIONAL LEVEL

Educational level	Global GAP certification				Total	
	Yes		No			
	N	%	N	%	N	%
No formal Education	4	66.7	2	33.3	6	100.0
Primary	5	50.0	5	50.0	10	100.0
JSS/Middle School Certificate	16	50.0	16	50.0	32	100.0
SSS/Technical Education	26	60.5	17	39.5	43	100.0
Tertiary	29	69.0	13	31.0	42	100.0
Total	80	60.2	53	39.8	133	100.0

$X^2 = 3.300$; df = 4; p-value = 0.509; Cramer's V = 0.158

APPENDIX N

SUMMARY OF PRODUCTION SHARE IN VARIOUS MARKET SEGMENTS

Statistics	Market Unit Share of Produce			
	Local Market (in tons)	Export Market (in tons)	Export own produce (in tons)	Processed Market (in tons)
Mean	11.6114	14.9386	6.3981	23.1207
Median	6.0000	.0000	.0000	9.2000
Mode	.00	.00	.00	.00
Std. Deviation	16.19530	47.61524	28.31160	75.67333
Skewness	3.753	5.960	6.404	8.775
Std. Error of Skewness	.210	.210	.210	.210
Range	120.00	400.00	240.00	800.00
Minimum	.00	.00	.00	.00
Maximum	120.00	400.00	240.00	800.00
Sum	1544.32	1986.83	850.95	3075.05

Source: Field Survey Data, Khiddir (2019)

APPENDIX O

SUMMARY STATISTICS OF EMPLOYED WORKERS AND HOUSEHOLD SIZE OF RESPONDENTS

Statistics		Number of Employees	Household Size of Mango Producers
Mean		3.1353	6.2331
Median		2.0000	6.0000
Mode		2.00	5.00
Std. Deviation		3.38173	2.56103
Skewness		4.350	1.376
Std. Error of Skewness		.210	.210
Range		30.00	15.00
Minimum		.00	2.00
Maximum		30.00	17.00
Sum		417.00	829.00
Percentiles	25	1.0000	4.0000
	50	2.0000	6.0000
	75	4.0000	7.0000