UNIVERSITY OF CAPE COAST

EFFECTS OF PINEAPPLE CULTIVATION ON RURAL SMALLHOLDER FARMERS IN THE EKUMFI DISTRICT OF CENTRAL REGION, GHANA.

MICHAEL AIDOO

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BY

MICHAEL AIDOO

Thesis submitted to the Department of Geography and Regional Planning, University of Cape Coast in partial fulfillment of the Requirements for the award of Master of Philosophy degree in Geography and Regional Planning

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DECLARATION

Candidate's Declaration

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

Candidate's Signature: …… Date: ……..

Candidate's Name: Michael Aidoo

Supervisor's Declaration

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

Supervisor's Signature: ……Date: ……..

Name: Prof. Simon Mariwah

ABSTRACT

The study sought to assess the effect of pineapple cultivation on rural households: the case of smallholder farmers in the Ekumfi district of Central Region, Ghana. Specifically, four research objectives were investigated; to examine access to land for pineapple cultivation, to assess the positive and the negative effects of pineapple cultivation on farming household, to assess the challenges of the farmers in the pineapple cultivation and to explore strategies for enhancing the benefits of pineapple cultivation. Employing a descriptive research design and a mixed method approach, a census was used to gather data from a total of 140 households' respondents and 7 key informants in the Ekumfi Nanabin of the Central Region of Ghana. Data for the study were gathered through structured interview, questionnaires and observation. The data collected was processed using the IBM SPSS Statistics (version 26). Descriptive statistics purely mean and standard deviation were used to the address issues in the study. The study found that acquisition and access to land for pineapple cultivation in the Ekumfi Nanabin was mainly by inheritance and in some instances by sharecropping agreement and rent. The study also found that pineapple cultivation is a beneficial business venture but bedeviled with challenges such as post-harvest losses, poor road network and inadequate access to credit. The study recommends that Government provide farmers with subsidized fertilizers, suckers and collateral free loans to increase pineapple production. The poor road networks which mostly restrict transportation of harvested pineapple should be constructed to ease these difficulties.

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DEDICATION

To my beloved father of blessed memory Mr. Jacob Kofi Amamu Aidoo

whose guidance has helped me to come this far.

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LIST OF ACRONYMS

AMEX	American Express International
CTA	Africa Cooperation Technical centre
CEDECOM	Central Regional Development Commission
DFID	Department for International Development
EFEG	Exotic Fruit Exporters Association of Ghana
EFID	Export Development and Investment Fund
EMQAP	Export Marketing and Quality Awareness Project
ERP	Economic Recovery Programme
EUROSTAT	European Statistics
FAOSTAT	Food and Agriculture Organisation Corporate Statistical database
FASDEP	Food and Agriculture Sector Development policy
GAEC	Ghana Atomic Energy Commission
GEPA	Ghana Export Promotion Authority
GEPC	Ghana Export Promotion Council
GLOBALGAP	Global Good Agricultural Practices
GSS	Ghana Statistical Service
GLSS	Ghana Living Standards Survey
HAG	Horticultural Association of Ghana
HEII	Horticulture Export Industry Initiative
ICS	Internal production Control System
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute

ISSER	Institute of Statistical Social and Economic Research
L I	Legislative Instrument
MD2	Dole and Del Montein
MOFA	Ministry of Food and Agriculture
MOAP	Market Oriented Agricultural Programme
MoTI	Ministry of Trade and Industry
OECD	Organisation for Economic Co-operation And Development
PHC	Population and Housing Census
SAP	Structural Adjustment Programme
SPEG	Sea- Freight Pineapple Exporters of Ghana,
SLF	Sustainable Livelihood Framework
SRID	Statistics, Research and Information Directorate
TIP	Trade and Investment Programme
UNCTAD	United Nations Conference on Trade and Development
WDI	World Development Indicators

CHAPTER ONE

INTRODUCTION

Background to the Study

Pineapple is one of the most economically important tropical fruits that have significant nutritional, commercial and industrial potential (Duval et al., 2001). It is a perennial herb, grown for its sweet and juicy fruit, which can be consumed fresh or in processed form. It is cultivated predominantly for its fruit that is consumed fresh or as canned fruit and juice (Duval et al., 2001). The stems and leaves of pineapple plant are also as source of fibre that is white, creamy and lustrous as silk (Joy, 2010). Parts of the plant are used for silage and hay for cattle feed, processing wastes in the form of shell, core materials and centrifuged solids from juice production are also used as animal feed and also alcoholic beverages can also be made from juice (Montinola, 1991). They grow well in areas with low rainfall and well-drained soils. The production cycle (planting to harvesting the fruit) is between 12 and18 months (Kleemann, 2014). There are a number of pineapples species, including 'comosus', which contains all the cultivars planted. The most popular variety is the 'Cayenne', whose leaves are much less thorny. The other varieties are: Queen, sugar loaf, Spanish, Abacaxi and Perolera (Ravry, 2005).

Being a vegetative propagated plant, conventional hybridization techniques for the generation of better pineapple varieties are cumbersome and time consuming, however increasing export orientation and moving towards higher value fruit supply chains have opened up new development pathways toward reducing rural-urban poverty (Mhatre, 2007).The export oriented nature of the sector plays a very important role in generating employment opportunities

for farmers, pineapple traders and exporters which have in turn enhanced welfare and poverty reduction schemes in both rural and urban areas (Jaeger, 2008).

In 2014, global pineapple production exceeded 24million tons while its world trader represents more than US$7billion.The market for fresh pineapples is one of the fastest growing fruit markets in Europe (Eurostat, 2014). Brazil, the Philippines and Thailand are the world largest pineapple producers. In Africa, Nigeria and Kenya are the leading pineapple producers, while Côte d' Ivoire and Ghana are the largest African exporters (Pro-Agro Collection and Africa Technical Centre for Agricultural and Rural Cooperation (CTA, 2016). According to Food and Agriculture Organisation (FAO, 2019), the Asian Continent is the biggest production of pineapples producing 11.8 million tons representing 41% of worlds total production followed by the American Continent with10.4million tons representing 38% of worlds total production. The Africa Continent produces5.7 million tons representing about 20% of the world's total production.

Pineapple production was introduced in Ghanaian the17thcentury or earlier. Samsam, a village in the Greater Accra Region was the place the Basel missionary was known to have cultivated the first pineapple crop and it has remained one of the leading pineapple producing areas in the country (Pinto, 1990).The rapid development of agriculture through the Basel Missions and governments led to the spread of pineapple production to other towns and villages within the Greater Accra Region and eventually to other regions of the country such as Eastern, Volta and Central regions of Ghana(LaAnyane,

1963).The two major traditional varieties grown in Ghana are the smooth cayenne and the sugar loaf.

Export of fresh pineapples in Ghana began in 1940s and air export of fresh pineapples to the EU market in the1970s (Danielou & Ravary (2005). The fast-growing pineapple market in the European Union (EU), therefore, presents an excellent huge opportunity for the Ghanaian pineapple industry to explore since a bilateral trade agreement in 2008 with the EU opens up the entire EU market to the industry. This bilateral trade agreement removed all trade barriers for agricultural produce from Ghana (Wolter, 2008). Ghana is the second largest African pineapple exporter to Europe after Côted'Ivoire and is expected to increase its market share (Pay, 2009). The importance of the pineapple farming for Ghana's national development has increased over the past decades. Commercial production of pineapple for export in Ghana reached its peak export level of 52,000 tons in 2004, with market share increasing from virtually zero to10% in EU fruit markets (Mensah, 2012).

The pineapple sector took leadership in the Ghanaian fruit industry by contributing a greater share of foreign exchange earnings to the economy (approximately €372 million, 66.2%) from 2000 to 2013 (Eurostat, 2013). The initial rapid growth in the pineapple sector through Unforeseen effect induced strong growth in other sectors of the economy especially in the export sector, the transport and logistics sector, the agro processing sector and the local retail sectors. This led to increased employment and wealth generation in both rural and urban areas of the Country (Pay, 2009). In terms of livelihood contribution, the pineapple sector contributes largely towards meeting food needs, and provides employment opportunities over 20% of the Ghanaian working

population, especially pineapple production in rural areas (Diao, 2010; World Development Indicators (WDI), 2011).

However, the success story of the pineapple sector was abruptly interrupted by a series of crisis starting 2005-2013 (Kleemann, 2011). Many producers and shippers were greatly affected by this change in varietal preference thus making pineapple production for export come to a virtual collapse. The farmers who successfully managed to switch to the new variety were faced with initial difficulties. These difficulties included lack of planting materials and agronomic practices which led to low exportable yields with a high investment cost. The worst casualties as a result of this structural change were smallholder farmers, who were not financially stable to invest in MD2 production (Jaeger, 2008; Kleemann, 2011).

The rise of Costa Rican fresh pineapple export to Europe with the introduction of new pineapple variety called MD2 by the company Dole and DelMontein1996 took over the US and European markets (Fold & Gough, 2008). The introduction of MD2 nearly collapsed the Ghanaian pineapple sectors since most small-scale farmers, who constitute the bulk of producers could not easily switch to theMD2 variety as demanded by changes in the international market. The international market preference shifted swiftly in 2005from the traditional well adopted smooth cayenne and sugar loaf varieties to MD2 variety. Consequently, it became difficult for small farmers to participate profitably in the market (Rieple & Singh, 2010).The sector's inability to react quickly to changes in international market demands; both market share and comparative advantage were lost to Costa Rican exporters (Gatuneetal.,2013).The shift engulfed the smallholder farmer with so many

challenges including cost of initial certification, management of internal production Control System (ICS), some of the farm inputs like the technology, and high marketing quality standards were sophisticated to the stallholder farmer. The MD2 shift requires sophisticated production system which is very expensive unsustainable to the smallholder farmer (Gatuneetal., 2013).

To gain markets in EU entails substantial cost to the smallholder farmer in terms of meeting certification, standards and technological adjustment costs. The change meant that smallholder farmers had to replace the existing suckers with the new MD2suckers which required comprehensive and precise chemical usage and agronomic practices in order to obtain the optimum yield (Gatune et.al. 2013). Majority of such smallholder farmers who grow mostly the smooth Cayenne and sugar loaf could not react quickly to the sudden changes in production. In the midst of these challenges most of these smallholder farmers were demoralized and frustrated leading to a downward production trend as most farmers switched to producing other crops or completely abandoned their pineapple fields (Dadzie, 2008). The financial and economic consequences of decreasing pineapple export volumes in Ghana cannot just be ignored due to it stipple effect on the smallholder farmers' income and other sectors of the economy (Gatune etal., 2013).

Pineapple production is viable in four of Ghana's ten administrative Regions namely Eastern, Central, Greater Accra and Volta Region. Central Region is the leading producer of pineapple in Ghana (MoFA, 2010), with the Ekumfi District being the leading pineapple producer in the central region (PHC, 2010). The ease of cultivation of pineapple in Ghana is mostly due to the following factors; favorable climate and soil conditions for the production of

pineapples all year round, geographical location of Ghana guarantees low air and sea freight that ensures competitiveness of its export produce, abundantly cheap skilled and unskilled labour force (i.e. low labour costs) and are relatively stable political situation in Ghana that creates a good investment environment for investors (Mensah, 2012).These factors present the sector with an excellent comparative advantage of becoming a major producer and supplier of quality but inexpensive pineapple products(i.e. Raw and processed)to the EU markets(Jaeger, 2008).

Statement of the Problem

With high demand for the fruit locally and internationally, pineapple became not only the first but also the most important export fruit of Ghana (Gatune et al., 2013). Like other organic products, organic pineapple earns a premium price on the market compared to Conventional varieties (Bolwig etal., 2009). However, the production of conventional pineapple in Ghana is mostly dominated by big transnational companies that own large-scale plantations (Jaeger, 2008). Central Region is the leading producer of pineapples in Ghana, (MoFA, 2015). Pineapple is grown in commercial quantities in about six districts out of the 20 districts. This includes the Awutu-Efutu-Senya, Gomoa, Mfantseman, Abura-Asebu Kwamankese and Komenda-Edena-Eguafo Districts). In 2019, Ghana was ranked 17th with export share of 0.60% and 12th in the world's total production producing 668,946 tons representing 2.41% in the world. The bulk production coming from Central region (FAO, 2019). With an estimated 450 smallholder farmers engaged as pineapple out-growers, it is

expected that 5,750 direct beneficiaries' employment will be assured through increased margins on fresh fruits exported to Europe, (MoFA,2015).

The then Vice-President of the Republic of Ghana, Alhaji Aliu Mahama in November 15, 2006 touched on measures to enhance pineapple farmers' access to credit and said over 50 commercial and rural banks and financial NGOs will help farmers to access new funding and new banking capacity to eliminate shy lock' money lenders and other unorthodox financial intermediaries who reap profits off the sea to four hardworking farmers in the region(Ghana web Business News, November 15, 2006).The former Central Regional Minister, Mr. Samuel Sarpong, in May 18, 2013 launched a GH¢1.2million organic Sugar-Loaf Pineapple growing project at Essarkyir in the Ekumfi District of the Central Region. The project, which was jointly sponsored by Japan and the Central Regional Development Commission, (CEDECOM) was aimed at expanding and improving sugar-loaf pineapple cultivation in order to reduce poverty in the district. The two-year project was expected to assist 277smallholder-farmers in the district to cultivate one-acre pineapple farm each, and also create access to the export market. He noted that pineapple growing has been identified as the pre-occupation and the life blood of the People of Ekumfi although the farmers are confronted with challenges which position them below the poverty line. He said pineapple cultivation in the area is saddled with challenges including pest infestation and unavailability of market for the product, which leads to huge post-harvest Losses and low pricing of the commodity (Ghana web Business News, May 18, 2013).

In spite of the rapid expansion of pineapple cultivation in the Ekumfi District over the years, the district is one of the poorest in the region with

headcount poverty of 48.4% compared with the regional average of 19.6% (GSS, 2015). It is against this background the study seeks to assess the socio-economic effects of pineapple cultivation on the smallholder farmers in the Ekumfi District of Central region. Although many studies have been conducted on pineapple cultivation by many researchers on Pineapple Production and Marketing in Ghana by Kuwornu, Abdulai and Osei-Asare, (2013). Assessing and Mapping the Supply Chain of Pineapple Production in Ghana by Otchere, Anin and Sarpong (2016), and Organic Pineapple Farming in Ghana-A Good Choice for Smallholders? By Kleemann, (2011), not much has been done on the effects of pineapple cultivation on rural households.

The study was limited to smallholder pineapple farmers in the Ekumfi District in the Central region. The majority of the smallholder farmers in the Individual households and opinion leaders were selected for their opinions on the effects of pineapple cultivation on the rural households in the Ekumfi District of Central region. This is because pineapple farming creates a profitable business venture where pineapple farmers are gainfully employed to earn a living. The decision to produce for export has prompted pineapple farmers to learn how to intensify their production (Conley & Udry, 2010).

Purpose of the Study

The main objective of the study was to assess the effects of Pineapple cultivation on the rural households in the Ekumfi District of Central region.

The specific objectives were to:

1. Examine access to land for pineapple cultivation.
2. Assess the positive and the negative effects of pineapple cultivation

on farming household.

3. Assess the challenges of the farmers in the pineapple cultivation.
4. Explore strategies for enhancing the benefits of pineapple cultivator.

Research Questions

1. How do farmers access land for pineapple cultivation?
2. How pineapple cultivation does affect socio economic well-being of the farming households?
3. What are the challenges of the farmers in the pineapple cultivation?
4. What strategies do farmers embark on to enhance the benefits from pineapple cultivation?

Significance of the Study

The significance of the study is evident in its potential to provide information on current trends of pineapple plantation and how it affects the livelihood of the farmers. This study contributes by filling the gap using data set covering the pineapple farmers in the Ekumfi district. The study goes beyond assessing the effects of pineapple cultivation on the wellbeing of farmers but to assess the challenges and copping strategies in the pineapple cultivation geared towards improving the livelihood of the smallholder farmers in the Ekumfi District. The empirical insights gained from this study will therefore aid policy makers in formulating appropriate future intervention programs to help boost output levels of the smallholder farmers in the pineapple sector.

Scope of the Study

The study was limited to household heads in Nanabin in the Ekumfi District. The majority of the household heads and opinion leaders were selected for their opinions on the effects of pineapple cultivation on rural house households.

Limitations of the Study

While findings from the respondents and participants revealed that there have been positive effects of pineapple cultivation on their livelihoods, however, longitudinal study would have provided a better picture of the phenomenon.

Definition of Terms

For the purpose of this study, these key concepts were adopted and defined as follows:

Rural

Meaning of the word 'rural' has undergone multiple transformations for decades, many different definitions of rural have been given, each focusing on a different specialized aspect such as statistical, administrative, built-up area, functional regions, agricultural, and population density (Gilbert, 1982). According to Chigbu, 2013 rural is defined as Place of homeliness shared by people with common ancestry or heritage and who inhabit traditional, culturally defined areas or places statutorily recognized to be rural.

However, descriptive definitions are all geared towards various

planning and academic purposes and they consider rural areas as deeply different and opposed to urban ones (Halfacree, 1995). In this research, rural areas will constitute the space where human settlement and infrastructure occupy only small patches of the landscape and most of the land is dominated by fields and grassland, woods and forest for agricultural purposes. They are also placing where most people spend most of their working time on farms; where land is abundant and cheap; where transaction costs are high; and where political conditions are most difficult. (Ashley and Maxwell, (2001).

Land

Land is a delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface including those of the near-surface, climate, the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes, and swamps), the near surface sedimentary layers and associated groundwater reserve, the plant and animal populations, the human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc (FAO, 1995). Specifically in this study, it is seen as a natural resource that enhance commercial pineapple cultivation.

Land Tenure

Land tenure is defined as the system of rules, rights, institutions and processes, under which land is held, managed, used and transacted (Cotula, 2006).

Sharecropping

Sharecropping is used in this study as a farming practice which involves a situation where a farmer acquires land from a landowner for cultivation of crops, and then shares the farm produce on contractual agreements with the landowner. It is a form of land acquisition which guarantees the usage of land for commercial agriculture (Nsiah-Gyabaah, 2000).

Household

A household in this study refers to a person or a group of people, who live together in the same house or compound and share the same house-keeping arrangements. In general, a household consists of a man, his wife, children and some other relatives or a house help who may be living with them (Ghana Statistical Service, 2010). These households are residential units whose members share common domestic functions and activities together.

Livelihood

Livelihood is explained in this study as the capabilities, activities and assets, including both material and social resources, required for a means of living. According to Chambers and Conway (1991), livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future while not undermining the natural resource base.

Smallholder farmers

Is defined in various ways depending on resource endowment

such as land and labor, country and type of commodity being produced (Aloui and Kenny, 2005). Thus, other terms used interchangeably with 'smallholder' includes 'small-scale, resource poor' and 'peasant farmer.' This definition varies across countries, for instance, in Ethiopia and Kenya, smallholders are farmers with up to 2 acres of land while in Zambia, smallholders have up to 5 acres of land (Okello et al; 2009). In Ghana, smallholder pineapple famers are described as group of small-scale and family producers with less than twenty acres of land with limited access to inputs, mechanical equipment, and training (Danielou and Ravry, 2005).

According Abdul (2005), smallholder farmers are farmers who cultivate using mainly family labour and for whom the farm provides the principal source of income. Small scale farmers normally have small portions of land averaging 1-10 acres. For the purpose of this study, smallholder farmers were referred to those farmers in Ekumfi district of the Central region who cultivate pineapple on less than 10 acres of land.

Organisation of the Study

This study is organized into five chapters. Chapter one presents the background to the study, statement of the problem, purpose of the study, research objectives and questions. It also explains the key terminologies employed in the study. Chapter two presents the theoretical and empirical literature as well as the conceptual framework of the study. This chapter examines theoretical approaches on the effects

of pineapple cultivation on the rural households. The chapter further highlights the nature and the scale of the pineapple production and how that affects the well-being of the farmers in the Ekumfi District. It also assesses the challenges of the farmers in pineapple production and coping strategies to be adopted by the famers. Chapter three discusses the methodology employed in the study. It encompasses the research design, data sources, target population, sample size and sampling procedures, instruments used in collecting data, and methods of data analysis. It further discusses the ethical considerations that guided the study. Chapter Four presents results and discussion while Chapter Five focuses the summary, conclusions and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter focuses on reviewing related literature which has bearing on the issues under investigation. It incorporates conceptual and empirical review. The empirical review was devoted to reviewing the works done by others which are related to this study. This gave room for comparison to be made between the findings that emerged from this study and those from previous studies. The chapter also reviews the challenges facing smallholder pineapple production and the copping strategies for smallholder pineapple growers.

Access to Land for Pineapple Cultivation

The increase in land acquisitions for agriculture in Africa has generated much debate about the continent's livelihoods, individual rights, the environment and overall development (Cotula, 2012; Tsikata, 2004). Land acquisition for agriculture has extensive positive and negative effects on economic, social, spatial and ecological development (Lambin & Meyfroidt, 2011). These impacts are especially true in African countries where land market institutions are weak and opportunities for economic gain through illegal actions are widespread. Research indicates that little attention to date has been paid to everyday gendered struggles over land in rural communities and how changing agricultural land use may affect food security and poverty alleviation for different groups (Whitehead & Tsikata, 2003).

Access to land is important for the livelihoods of the majority of Ghanaian populations, and the social and economic development of the society as a whole (Lund, 2011). In this regard, land appears to be one of the most important productive assets of rural residents in developing countries (Sietchiping, et al, 2012). Therefore, how land is accessed and used has far reaching implications for productivity, equity, and overall economic growth of rural communities in Africa.

In most rural Ghanaian communities, customary systems determine access, use and transfer of land. Across Ghana, farmers have historically accessed land through varying customary arrangements, largely dictated by their social standing within the land-owning community (Bugri & Yeboah, 2015). For example, a customary usufruct, who is a member of the land-owning group, has an inherent right to acquire and cultivate part of the jointly owned land, provided it is previously uncultivated (Sietchiping, et al, 2012). Correspondently, non-members of the community/ clan then obtain access by purchase, rental, gift, license or share contract arrangements (Lund, 2011). Conversely, in modern capitalist and urban systems, land markets have become the commonly accepted mechanisms that allocate ownership and use rights in a manner that allows land and its associated assets to be used in the most economical way (Mahoney et al, 2007). In rural farming communities in Ghana, under the tutelage of customary tenure systems, where land sale is prohibited, land rental arrangements constitute the most efficient mechanism for allocating land and improving its access by the poor, especially women and other marginalized groups (Ngaido, 2004). Under these arrangements, land rights are

usually exchanged temporary, usually for a contracted amount of money or other material things, and for an agreed duration.

These arrangements fall under the generic term known as land rights arrangements, which describe the bundle of arrangements through which people gain access to land from others, usually non-family, and for a limited duration (Lavigne-Delville et al, 2002). Such arrangements usually take variety of forms, broadly described in terms such as leasing, tenancy, share cropping, and lease. In Ghana, these rental arrangements have a long-standing tradition and have evolved dynamically in response to increased land scarcity (Deininger & Mpula, 2003).

Customary systems are usually managed by a traditional authority such as a chief or a family head (Bentsi-Enchill, 1975). For the majority of the rural populations decentralized customary land tenure systems are still the norm, though marked variations exist across regions in Ghana (Ngaido, 2004).

Farm land can be accessed through either patrilineal or matrilineal inheritance systems. Communities, families and individuals belonging to the land-owning group held the customary rights to land used for settlements, food and cash crop farming, or even rested as fallow lands (Bugri & Yeboah, 2015). Communal rights were, and are still exercised over any grazing land and fishing grounds by community members (Benneh, 1975, Kasanga, 2002).

Sharecropping is a system of land use arrangement common in most parts of rural Ghana (excess land and migrants seeking land).

This system of sharecropping functions in two main prominent ways, namely, ‘abunu and abusa’. Under the system of ‘abunu’, the completed farmland is physically divided into two with tenant and landlord taking equal

shares of the cropped land. The tenant from thence enjoys the produce from his farm as long as the crop remains on the land. Tree crops such as cocoa, oil palm, coconuts and pineapples were, and still are, common crops in an abunu tenancy (Bugri & Yeboah, 2015).

Under the sharecropping system the tenant farmer is supposed to use one-third of the share to defray the cost of farm operation, the other one-third as his personal remuneration, whilst the remaining one-third goes to the landlord as his rent for the land (Bugri & Yeboah, 2015). Over time, these customary systems are continually evolving because of cultural interactions and diffusion, socio-economic change and political processes (Kasanga, 2002).

In the Central region, especially in the Ekumfi District, local and foreign actors are acquiring land for agricultural production. The local actors, namely, the chiefs and the family heads play very significant roles in land acquisitions by virtue of the power they wield in granting access, and determining the kind of rights to be derived from land. The acquisitions have a devastating effect on the livelihood of the peasant farmers in that most of them have lost their source of livelihood in the community.

The Pineapple Production

Pineapple is a perennial herb native to tropical and subtropical South America and is adapted to areas with low rainfall and well-drained soils (Evans, etal 1988). Pineapple is grown for its sweet and juicy fruit, which can be consumed fresh or in processed for. It is a rich source of vitamins (C, A and E) and minerals in the human diet (FAO, 2008). Globally, pineapple production takes between 12 to 18

months from planting to harvest, depending on the soil quality, water availability and other inputs use (FAO, 2013). Sugar loaf is conical in shape with very sweet juicy pulp whiles Smooth cayenne is middle sweet with very intensive flavor. These varieties due to their relatively large size are very suitable for extraction of pineapple juice/concentrate and making pineapple salad (Wardy et al., 2009).

Pineapple is an important traded crop and is grown in developing countries where two-thirds of the rural population lives on small-scale farms of less than two hectares (International Food Policy Research Institute (IFPRI, 2005, FAO, 2008). There are more than 80 countries producing approximately 17 million tons of pineapples annually. More than 11 million (65 percent) of the 17 million tons grown are destined for export). Pineapples are exported in various forms, and nearly 80 percent of pineapples are found on the market in processed form: 48 percent asjuice and 30 percent as canned fruits (FAO, 2008). Costa Rica, Thailand, Brazil, the Philippines, and India are the world major producing countries. Thailand, the Philippines, and Indonesia account for 80 percent of the canned pineapple industry. Brazil's production is essentially consumed domestically as well as India's (FAOSTAT,2010).

Ghana is the second largest African pineapple exporter to Europe after Côte d'Ivoire and is expected to increase its market share (Natural Resources Institute, 2010; Pay, 2009) and fourth in the world (Jaffee etal., 2011) Pineapple production is the most important crop activity in the Horticultural sub-sector of the Ghanaian economy (Agyare, 2010). Pineapple is the largest contributor to non-traditional export in

Ghana even though about 45 percent of the total cultivation is performed by smallholder farmers (Bertow, 2007). According to Ghana Living Standards Survey conducted in 2008, 2 % of households in Ghana cultivate pineapple on both subsistence and commercial bases (GSS, 2008).

The main pineapple varieties cultivated in Ghana are the sugarloaf, smooth cayenne and MD2 varieties. Producers of fresh pineapples in Ghana can be classified into four categories, namely smallholder producers, out-growers, large/medium- scale commercial producers or exporters (including local and transnational companies), and international agribusiness corporations (Achaw, 2010). Production on larger farms is known to be more input intensive, whereas productions on small farms often practice extensive cropping systems, with long fallow periods of up to ten years, and with limited access to farm inputs, mechanical equipment and training. Many smallholders in Ghana use very little or no organic fertilizers in cultivation (Amoako, 2010; Ninson, 2012; Kleemann, 2012).

Smallholder pineapple farmers in Ghana cultivate between 1 to 20 acres of land, mostly without irrigation, hence highly dependent on rainfall (MoFA, 2013). In Ghana, pineapple is usually propagated from the suckers and harvest occurs 16–18 months after planting (Osei-Kofi et al, 1996). Main activities during the vegetative stage include planting, plant replacement and crop husbandry. Flowering primarily involves artificial flower induction (also called forcing) and sunburn protection. Labour is required by all activities making pineapple a labor-intensive production in Ghana (MoFA, 2013).

When the fruit is almost ripe, each fruit is inspected by the buyer for its shape, colour, and size. If it satisfies the quality standard, it is harvested (Osei Kofie etal, 1996). Conventional pineapple is degreased shortly before harvesting using a chemical to achieve uniform colour of the fruit. Harvesting takes place all year round. Pineapple is an off-season fruit on the European market with peak seasons for export from Octorber to December and from February to April/May (MoFA, 2013). Ghana´s pineapple is almost entirely directed to the European market. Fresh pineapple export sub-sector is the most developed of all the non-traditional horticultural export crops in Ghana (Sefa-Dedeh, 2005). A total of 120,000 tons to 150,000 tons of pineapples are produced in Ghana annually (Kleemann, 2011). Large/medium scale companies and international corporations operate at different stages of the value chain; some are producers, others are processors and exporters some players often manage to integrate all these activities into their operations (Danielou & Ravry, 2005).

Production costs are lower on small-scale farms due to lower input and supervision costs and cheap and easily available family labour. If labour for farm activities and supervision was to be measured at market rates, small farms may have higher production cost (Natural Resource Institute, 2010). The current Ghanaian pineapple industry is characterized by rapid changes due to changing regulations and the shift of international demand from smooth cayene variety to MD2 variety. The shift to the MD2 has driven a lot of farmers, especially the smallholder farmers out of production (Pay, 2009).

In 2008 the share of smallholder production in exportable pineapple was estimated to be 40-45 percent (UNCTAD, 2008). According to Sea- Freight Pineapple Exporters of Ghana, 39 percent of exports of pineapple are produced by smallholders (SPEG, 2010).

The Market for Fresh Pineapple

Export of fresh pineapples in Ghana began in 1940s and initiated air export of fresh pineapples in small quantities to the EU market in the 1970s (Danielou & Ravary (2005). Export has increased constantly since the mid- 1980s. The comparatively low air freight cost during export was a factor that accounted for the industry becoming even stronger and more productive (Danielou & Ravry, 2005; Jaeger, 2008). The industry was made up of smallholder producers until the early. 1990s, after which the government of Ghana implemented policies and programmes that led to the expansion of the industry (Danielou & Ravry, 2005). Large-scale commercial producers, both local and international, took advantage of the favourable policies and of support from government and donor agencies, to vertically integrate into production (Takane, 2004; Fold & Gough, 2008).

The export volume of fresh pineapple in 1983 was only 57 tons, and significantly moved to 15,319 tons in 1994, while in 1999 it exceeded 33000 tons despite the temporary decrease in 1998-1999, due to drought. It further went up to 46,391 tons in 2002 (Takane, 2004; Trienekens and Willems, (2004). Currently, Ghana produces 668,946 tons of fresh pineapples representing 2.41% in the world (FAO, 2019).

According to Fold and Gough (2008), the export sector of the pineapple industry has provided significant benefit to Ghana especially between 1983 and 2005. This gives indications of positive economic potential for Ghana, one of the largest producers of pineapple in Africa (Natural Resources Institute, 2010). However, Ghana's volume of export declined from all time highest of 56,094 metric tons in 2004 to 17,780 metric tons in 2010, representing over 68% (FAUSTAT of FAUN (2010). Most pineapple is exported to the EU, with Germany as the most important importing country (30% of total exports) followed by countries such as Belgium, Switzerland, France, Italy, Luxembourg, the Netherlands, and the UK (GEPC, 2008; Danielou & Ravry, 2005; Kleemann, 2011).

The rapid increase in pineapple export has been associated with series of liberalization policies adopted under the Structural Adjustment Programme in 1986. All nontraditional exporters became exempted from export duty and eligible to claim a corporate tax rebate. Such incentives among exporters contributed to the increase. Ghana has, over the period, been the largest exporter of fresh pineapple by air due to this distinct advantage (Kleemann, 2012).

In 2006, the value of pineapple exports amounted to over $19 million, 38 per cent of total value of horticultural exports (GEPC, 2007). The industry experienced growth from 1994 to 2004 especially from 1999 to 2004 at a cumulative annual growth rate of 172%. This resulted in increased market share of fresh Ghanaian pineapples in Europe from 7-8% in 1999 to its highest level in 2004 of 10%

(EUROSTAT, 2010). It is estimated that smallholder farmers contributed about 50% of export volumes from Ghana (SPEG 2010).

Fold and Gough (2008) illustrate that the export pineapple industry provided benefits for significant numbers of smallholders in the South of Ghana between 1983 and 2005. Yet, since the introduction of a new variety a lot of smallholders have been excluded from the pineapple business value chain. Several cooperatives disappeared and the surviving ones were weakened (Fold & Gough, 2008). The evidence on the ability of smallholder cooperatives to compete in high-value international supply chains are mixed (Markelova et al., 2009; Roy &Thorat, 2008); (Wollni&Zellner, 2007). According to Kleemann (2011), there are situations where some exporters are also producers for a fraction of their export. The pineapples produced by these categories of farmers are absorbed into two markets, which are the export and the local markets.

Whole pineapples, as well as processed fruit segments, are distributed to large supermarkets, specialty shops and wholesalers in the export market (Coates et al., 2011). An estimated 30 % of the 63 % of pineapple exported from Ghana between 2003 and 2007 comprised processed products (juice, dried, and fresh-cut), while the remaining portion was exported as fresh pineapple (Kleemann, 2011). This indicates that a high proportion of Ghana's pineapple exports are in unprocessed form.

In addition to the export market, a sizeable domestic market for pineapples exists in Ghana Market research on organic products has

indicated a high demand for organic pineapple on the domestic market (Osei-Asare, 2009; Owusu & Anifori, 2012; Acheampong, Braimah, Ankomah-Danso & Mochiah, 2012). The domestic market absorbs a large quantity of pineapples when there is an excess supply or when the produce does not meet export quality (Takane, 2004). Blue Skies mainly buy their pineapple from smallholder farmers at prices competitive to those being offered by exporters. What this did was to offer greater market access to smallholder farmers and stimulate production of the Smooth Cayenne variety of pineapple (Afari-Sefa,2007).

There are two main supply channels on the domestic market, namely the processors and middlemen. A number of processing companies process pineapple into fresh cut, fruit salad, dried pineapple and juice for export markets and urban consumers at the local market. Ghana's pineapple processing capacity is currently estimated to be over 35 000 mt/year (Kleemann, 2012). Fresh pineapples are traded through a network of wholesalers and retailers, also known as middlemen. Middlemen then make the fresh pineapple readily available on roadsides and in local open markets. Middlemen take on risks associated with storage, transport and related finance (Coates et al., 2011). There are claims that, the relatively bigger size and shape of smooth cayenne and sugar loaf varieties pose some difficulty for orderly arrangement and space conservation in the EU super- market shelves (Wardy et al., 2009) (Achuonjei et al.2003).

Recent research by Kleemann, et. al (2014) in Ghana revealed

that, on average, a farmer cultivating one acre of certified organic pineapples obtains a profit of GH¢1710, whereas the conventional farmer obtains a profit of GH¢ 780 per acre. This indicates that the organic pineapple farmer obtains GH¢ 930 more profit than the conventional farmer. Also, a survey by USAID (2012) in Ghana, revealed that margins for smallholder organic certified pineapple producers, linked to the fresh pineapple market, were quite high, ranging from US$13691 to US$5 522 a year, with an average gross margin of US$1800 in a normal production year. Gross margins in the range of US$1800 per acre and higher were indicated as high enough, and likely sufficient, for a smallholder pineapple farmer to emerge from poverty, even with only one acre of certified organic pineapple production.

Generally, the fruit that does not meet export quality standards is sold to local processors or market women (Deaton and Miller, 1996). Large farms often prefer selling to processors what they cannot sell on the fresh export market, despite higher prices offered by market women (Fafchamps et al., 2003. The price difference may be underestimated because exporters might offer services to their contracted farmers, for instance the payment of certification fees (GLOBALGAP), The out-growers sell their produce to their contractors and the contractors in return provide various forms of support to the out growers, including advances of the out-growers' inputs in the form of suckers, chemicals, cash and technical support (Danielou&Ravry,2005).

According Rieple and Singh (2010), organic pineapple earns a

premium price on the market compared to conventional varieties. Currently, exports of fresh pineapples from Ghana are done by many companies, most of them located in the Central Region. Pineapple is a strategic crop with significant contribution to the economy of Ghana. The promotion of pineapple production and export has been effective in improving the income of rural poor farmers and reducing poverty, despite the challenges faced by the industry over the years (Mensah, 2012).

Policies, Institutions, and Management Decisions that Affect Smallholder Pineapple Farmers

Agricultural policies formed since 2002 are intended to contribute to economic growth and development by improving access to market and financial services, improving infrastructure, enhancing human resources and institutional capacity, and reducing unsustainable management of land (MoFA, 2002). Jordaan (2012) has stated that social, physical and institutional environment that small -scale farmers are embedded and operate in influence a farmer's behaviour in terms of making managerial decisions.

There have been several policies designed and implemented by the Government of Ghana over the years with positive impact on the pineapple export sector through the Ministry of Food & Agriculture and Ministry of Trade & Industry (Ministry of Food and Agriculture, 2007). Governmental agencies, non-governmental organizations (NGOs), international bodies and donor agencies have implemented and promoted organic production and its component techniques as a rural developmental tool for improving the

productivity of small-scale farmers, addressing food insecurity, and increasing farmers' income and their livelihood (Parrott, et. al , 2006).

Specifically, certified organic pineapple production is one of the strategies that have received much attention among the non-traditional export crops in Ghana. This is because certified organic pineapple has high demand in the foreign and domestic markets (Kleemann, 2012; Adebiyi, 2014). The promotion of certified organic pineapple production has enabled farmers to integrate into the competitive niche market, which has improved the livelihood conditions of smallholder farmers through export earnings and price premiums (Adebiyi, 2014). The pineapple sector has enjoyed a number of incentives to improve their competiveness. These include zero input duties on inputs, low level corporate income tax, zero import duties on farm machinery a subsidy on port handling charges between 1994 and 2009 (Institute of Statistical Social and Economic Research, 2009).

Other programmes like financing research projects, and launching MD2 multiplication through a partnership with the World Bank also provided the needed support for the farmers (Achaw, 2010). Donor agencies, NGOs and professional agencies have also supported smallholders to shift to the MD2 variety and attain certification (Fold, 2008). The strategy to diversify agriculture also hinges on the horticultural sub-sector and is expected to play a central role led by the pineapple industry in the country's quest to attain middle income status by the year 2020 (ADF Appraisal report, 2005).

According to the Ghana Living Standards Survey (2008), 170, 627 households (2 percent of all households in Ghana) grow pineapple,

but not all of them are on commercial basis. However, the inability of smallholder pineapple producers to comply with the ever-increasing stringent standards requirements such as Global GAP is having negative impact on the image of the whole agricultural export industry as well as the economy (Revised Ghana Food Safety Action Plan, 2007). Smallholder pineapple producers have to comply with these complex and costly requirements in order to remain in business.

However, some of developing Countries including Ghana rely on traditional methods of production and suffer from technical, human resources and financial limitations which prevent them from fulfilling these standards and therefore are excluded from international trade. On the other hand, large-scale commercial producers have found it relatively easy to comply with Global GAP as they already have access to the necessary financial, infrastructural and human capacity (Graffham & MacGregor, 2007).

Another issue is the lack of a framework to assess quality of exported fruits and the absence of exporters' agent on the market to conduct and verify quality reports (Afari-Sefa, V. 2007). Also, the certifications require annual audits and often go through modifications without full participation of exporters and producers in third world countries. This greatly affects the revenue base of the farmers and reduced cash flow investment (Whitfield, 2010).

The Government of Ghana through the Ministry of Food and Agriculture (MOFA) and Food and Agriculture Sector Development Policy (FASDEP) policy objectives for implementation is to increase

competitiveness and enhance integration into domestic and international markets (OECD, 2006; Henson & Reardon, 2005). In Ghana, some of the major pineapple exporters have taken steps toward Global GAP certification. However, the standards are rarely designed with the smallholder-based production system in mind where full traceability and control of field practices are difficult (Danielou and Ravry, 2005). Therefore, the challenge for Ghana is smallholder farmers' certification, which represents the bulk of the pineapple producers.

In spite of these policy lapses, the market has commenced various initiatives, which have brought in its wake synergies to offset the negative impact of this shift under the umbrella of their association SPEG and on individual basis through programmes executed and managed by SPEG. It covers various aspects of the industry ranging from production to market-related issues complemented with donor support (Sackey, 2001).

Some of the benefits to rural farmers including provision of toilet facilities in their communities, supply of computers and books for rural schools, credit schemes to assist farmers and institution of scholarship schemes to support brilliant but disadvantaged children (Korboe, 2010). The industry also benefits from the fertiliser subsidy program instituted by the Government of Ghana for the agricultural sector since 2008 (MoFA, 2012). Under this program, the government absorbs the retail price of three types of fertilizers, NPK, urea and sulphate of ammonia used by farmers in the country (MoFA, 2012).

The effects of these policies resulted in reducing the cost of production, and freeing up more capital for investment and expansion for smallholders farming (Jaeger, 2008)

Effects of Pineapple Production

Agriculture plays a very important role in Ghana's economy; in 2010 it contributed about 30% of GDP and employed over 60% of the working population (Ghana Statistical Service, 2010). Ghana over the past decades has relied heavily on a few primary commodities such as cocoa, timber and gold for foreign exchange earnings, (Ghana Statistical Service, 2010; Wolter, 2008). Ghana occupies a notable position in pineapple production in Africa and the world at large. This has helped to fully tap the economic potentials of pineapple production which have served as an important tool in achieving food security, self-sufficiency and creating jobs. (FAOSTAT, 2011), and (All Africa, 2011).

Although, smallholders represent an important group in pineapple production in Ghana, however, bulk of their production is According to Khalidetal, (2007) in the past, less emphasis was relatively placed on production on pineapple cultivation. Most of the harvested produce in the country was wasted due to production inefficiencies, postharvest losses, low level of technology to facilitate processing of quality pineapple products and inefficient market ing system (Ivan etal, 2011). However, generally, pineapple farming for export is deemed a profitable venture especially where the farmer is

self-sufficient in planting material (suckers) and markets the surplus (Obeng, 1994).

Although smallholder represents an important group in pineapple production in Ghana, their production is sold on local markert and also informally sold to large farms (Danielou & Ravry, 2005). Pineapple export plays a significant role in diversification of Ghana's export of which smallholder pineapple producers play key role. According Boateng, (1999) the poor organization and procurement of production inputs like fungicide and pesticide, fertilizer -urea, sulphate of potash, Ammonium and calcium sulphate affects pineapple planting in plantation and harvesting. Smallholder farmers are not organized into pineapple cooperatives, which are essential for managing exports and assessing credits, inputs and transportation.

The Statistical Research and Information Directory of MoFA, (2016), Facts and Figures on the Profitability and Risk Analysis of Ghana's Pineapple Exports indicated that production and export of pineapple is a profitable business particularly to the exporter who buys from the out- grower and therefore do not bare the risks involved in pineapple farming. However, there are no crop insurance programmes or options markets available for farmers and recommended that farmers could form cooperatives to present a unified front to explore agricultural insurance options. Amoako (1996) assert that long term institutional finance on non-traditional Agricultural Exports production affect marketing of the smallholder production and favor the large-scale commercial production. He noted that in dealing with agricultural

commodities that are perishable, there is the need for products to be sold in time to gain the full benefit of production. He also cited cases of exported products not being paid for by exporters, and smaller volumes of commodity not accepted, as being common in smallholder pineapple farming.

According to Jari, (2009) smallholder pineapple farmers' participation in pineapple production is very vital for sustaining economic growth, food security and poverty alleviation. Market participation has led to the rural development in the area of rural electrification, healthcare facilities, feeder roads, access to inputs, and flexible credit market. These enable farmers' access modern production technologies in promoting successful and efficient performance of the industry. Most smallholder farmers tend to be food secured because the income they derive from the sale of their output enabled them to purchase the staple food (Asfaw et al., 2010). Production of pineapples in Ghana is a beneficial sector to the domestic economy, as it provides higher incomes and new employment opportunities to farmers than other crops grown for the domestic market and consumption (Barrientos et al., 2009).

However, trade barriers and local monopoly also affects smallholder farmers to choose their markets for both inputs and harvested products (Shiferaw and Teklewold, 2007). There is considerable evidence that farmers overuse agro chemicals, especially pesticides and the Ghanaian farmers, field workers and consumers are at higher risk of contracting acute and chronic health effects associated with intensive use of pesticides (Fiankor et al., 2011). The intensive use

of pesticides also leads to unacceptable residue levels in exportable products that constitute a barrier to international trade. Many perceived that the presence of pesticide residues in the environment and food products is detrimental to human health and water quality (Fiankor, et al., 2011).

Challenges Facing Smallholder Pineapple Farmers

Pineapple production is labour intensive and the high level of labour requirements makes the cost of pineapple production expensive. Danielou and Ravry, (2005) identified constraints facing smallholder pineapple producers in Ghana as lack of good roads, cold storage facilities, shipping facilities, reliable energy supplies and telecommunication services, lack of testing facilities. Incoom (2008) discussed those farmers find it difficult to assess credit because they mostly do not have current accounts with these financial institutions which is a necessary requirement for credit disbursement. Also, the collaterals (a rural house or farm) they provide are not satisfactory hence, do not merit the credit and do not meet the requirements of these financial institutions. Income from pineapple production has an uneven flow since it is seasonally produced and varies from year to year depending on price, size of crop, the general demand situation, etc Smallholder farmers with less capital items such as warehouses, tractors and vehicles have little administrative cost whiles medium-scale holders (about 20 hectares) and large holders (about 100 hectares) incur high cost of production 1994 (Obeng, 1994).

The depreciation of the cedi has also led to astronomical increases in domestic prices of inputs, which are virtually imported (MoFA, 2016). Low literacy levels and technical capacity of the smallholder farmers means that there is an enormous hurdle that has to be jumped to access high value export markets Danielou and Ravry, (2005). Charlotte and Fairman, (2003) assert that little or nothing is gained from upgrading agronomic practices to comply with standards, unless the infrastructure and services to the sector were likewise upgraded to enable exporters to meet increasingly competitive commercial requirements.

According to Diao (2006), pineapple weeding is done manually and is difficult and expensive because pineapples are thorny in nature therefore it requires protective clothing. Raynolds (2004) holds that without financial assistance smallholder farmers would not be able to receive certification. Therefore, the process of upgrading is dependent on assistance. Wechter and Grethe (2006) study on Global GAP adoption by pineapple exporters noted that smallholders run the risk of being excluded from EU market if they are not supported to adopt Global GAP standards because of cost involved. Further, Graffham, (2006) in his study noted that high cost of Global GAP certification charged by certifiers as well as other recurring costs such as audit expenses, training and expensive pesticides act as barriers to compliance. Inadequate knowledge about market information act as constraints to the smallholder farmers to have access to domestic, regional and international markets (Swinnenetal.,2010).

Smallholder fresh produce are confronted with lack of proper market outlets because of long distance and/ or lack of transport which deprived these resource poor farmers of formal market access Bolwig et al., (2009), Poor infrastructure increases marketing cost for smallholder farmers in Sub-Saharan Africa. Transport costs alone add 15% to 20% of the cost of production (Aschenaki, 2004). This is consistent with the assertion by Diao and Hazell (2003) that smallholder farmers in Sub-Saharan Africa receive 10% to 20% of the export price of their produce, with the remainder being lost to transport and market costs.

In Ghana, farming in general is confronted with constraints which make it a risky venture. Risks generally increase with the increase in expected income (Kuwornu et al., 2009). It is believed that most farmers are risk averse because they are cautious in accepting new technologies or making additional investments in their farm enterprise especially if these changes will have direct effect on their income and livelihood. The degree of farmer's risk aversion depends on his socioeconomic characteristics as well as availability of technical and institutional support systems like infrastructure, credit, market information (Kuwornu et al.,2009).

According to GEPA (2012), MD2 constitutes about 90% of total production in Ghana, with smallholders accounting for about 2% of current production volumes. The smooth cayenne production, which is limited to a few smallholders usually have low demand (Ghana Export Promotion Authority (GEPA, 2012). Some farmers claim that when

processors have enough fruit, they tend to reject the fruit supplied by smallholders (GLSS, 2009). Pests and diseases are among the major problems that affect the production yield. According to Eria (2009), pineapple mealy bug wilt and nematode wilt the common disease that affects pineapples. The pineapple mealy bug wilt causes reddening of the leaves, downward curling of the leaf margins, loss of turgidity, leaves reflex downwards resulting in their death.

According to Adu-Amankwa, (1997) another difficulty the smallholders face daily is protecting the pineapples from animals and theft. As a measure against rampant theft, especially late at night and early in the morning, farmers act as security guards. Their duties include scaring away animals, which frequently invade the lands such as monkeys.

Issues of weather and rainfall patterns affect production of pineapple. This calls for huge investments in irrigation with attendant cost. The most important climatic factors for pineapple production in Ghana are rainfall and temperature, (Ministry of Food and Agriculture; 2013). Temperature is an important climatic factor affecting flowering stage (critical pineapple growing stage) where temperature increases result in poor production as the quantity and quality of fruits produced are affected. (Rainha etal, 2013). Even moderate elevation of temperatures poses possibly significant reduction in flowering of crops (Sthapit, Rao, & Sthapit, 2012). Rainfall also affects growing production during various growth stages (Omoyo, Wakhungu & Oteng, 2015).

In addition, studies have also indicated that dry periods during a growing season especially when accompanied by high temperature have the tendency to affect production (Thornton et al 2009). Lack of water at any stage of crop development can however, resulting low productivity (deAzevedo, 2007). These conditions are more likely to occur in the absence of supplementary irrigation, as is the case for most of Ghana's smallholder pineapple production. Pineapple is also sensitive to soil waterlogging which impacts fruit quality (de Azevedo, 2007). Difficulties of the smallholders to withstand the hardship result in low production (Adejuwon, 2006). Pineapple farmers in Ghana are generally reported to experience low production under long dry periods (Osei-ofi, Amoatey, Lokko (1996).

A very recent study by Williams et al.., (2017) confirms that, climate variability impacts on pineapple production in Ghana has consequences for both fruit quality and quantity produced. Adapting to climate projections therefore will require a new paradigm, as the adaptation actions taken so far by farmers are likely not to sustain and improve the pineapple production industry in Ghana. Adapting to impacts from projected climatic changes may even require structural changes such as irrigation facilities, which would demand government intervention. The decreasing rainfall trend in Ghana with significant increase in temperature is, therefore, of concern as future climatic variations and change is likely to further exacerbate this condition with implications for soil moisture which consequently can negatively impact on pineapple yields in the country (MoFA, 2013).

It will be reasonable for rain fed pineapple farmers in Ghana to consider supplementary irrigation especially during the dry months of the growing periods. The reduction in costs of production can lead to increases in profits (MoFA, 2013). The size of farmland available to a farmer influences the choice of production system suitable for farming. Farm size has been found to have a negative influence on farmers' decisions to adopt certified organic production in a number of empirical studies (Fertô & Forgács, 2002; Kallas et al., 2009; Läpple, 2010; Radwan et al., 2011 assert that rented farmland and family land tend have a negative influence on pineapple production. The authors revealed that if the larger part of the farm land is rented or family owned, landlords do not allow farmers to produce on long term basis.

Copping Strategies for Rural Pineapple Growers.

In an effort to restore farmers' confidence and revamp production, various government agencies, NGOs and other stakeholders intervened to provide both technical and financial support to farmers (Gatune et al., 2013). The financial and economic consequence of decreasing production cannot just be ignored due to its ripple effect on other sectors of the economy. This decline in the industry affects both forward linkage (i.e., supply side) activities such as agro-processing, exporters and transportation, and backward linkage (i.e., demand side) activities through the provision of inputs and services to the sector. Among which are deficiencies emanating from the production side, poor service delivery in the transport and logistics

sector reflecting the poor infrastructural state of the country as well as impact of adverse weather effects prevailing in the production environment (Gatune et al., 2013).

A number of programmes were initiated with funding from donors and the Government of Ghana to support the pineapple sector in the 1980s and 1990s (AMEX International., 2003). Pineapple Production Expansion programme was implemented from 1987 to 1990 by the Ministry of Trade and Industry (MoTI) and the GEPC. The main objectives of the programme were to expand production of pineapples for export, provide soft loans and assistance in accessing smooth cayenne variety of planting material from Ivory Coast, and technical assistance in production and exports of pineapple from Ghana (Korboe, 2010).

Agriculture Diversification Project - Horticulture Development Component implemented from 1991-1999 by GEPC and MoFA, embark on project in 1988 and was implemented with US$ 16.5 million funding from the World Bank, IDA credit (Ministry of Food and Agriculture, 2007). The fund was also used to create the Horticulture Unit of MoFA to serve as a project implementation unit (Sackey, 2001). The project was aimed at providing support to individual enterprises engaged in pineapple production (MoFA, 2007).

The form of organisational structure supporting the organic system in Ghana falls under three main categories. These include: farmers that have been organised by a company which provides the farmers with support; farmers operating under NGO initiatives; and

farmers who have formed their own organisations such as cooperatives, associations and self- help groups. Apart from these three main categories, the sector also receives support from other governmental and NGOs in Ghana (Kleemann & Abdulai, 2012).

The various organisations also provided support to the pineapple farmers in the form of consultancy, skills development training and programmes, infrastructure and consumer awareness building, input supply, financial assistance, information on standards and certification, and marketing links and development (Kleemann & Abdulai, 2012). Several interventions were made by donors and Government of Ghana to address availability of MD2 suckers for commercial and smallholder farmers from 2005 to 2007 (MoFA, 2007).

Other remedial measures were the setting up of Bio Plantlets Ltd, a commercial tissue culture laboratory at the Ghana Atomic Energy Commission (GAEC) funded by USAID (AMEX International., 2003). In addition, under the Horticulture Export Industry Initiative (HEII) there was collaboration with a private tissue culture laboratory Bomarts Ltd and Bio Plantlets Ltd to make available tissue cultured plantlets of MD2 variety to commercial smallholder farmers (UNCTAD, 2008). The development of a fresh cut fruits sectors using mostly the smooth cayenne variety and sourcing from small-scale farmers has the best chance of keeping smallholders in the export sector (Jaeger,2 009).

According to Omoyo et al. (2015), to ensure sustainable production, there is the need for adaptation of strategies to respond to the

changing climate as well as improved access to reliable climate information. They suggested technological changes (such as more drought-resistant varieties), managerial changes (such as increase farm size) and policy changes (such as planning regulations and infrastructural development) as options of possible adaptive responses to deal with climate variability.

Further, due to the importance of the industry, several research and professional institutions in the supply chain provide support for pineapple production in Ghana. The institutions include GEPA, which facilitates the development and promotion of export, and the Export Development and Investment Fund (EFID), which provides financial resources for the development and promotion of Ghanaian export. Some exporter associations, such as the Sea Freight Pineapple Exporters of Ghana (SPEG), the Horticultural Association Ghana (HAG), and the Exotic Fruit Exporters Association of Ghana (EFEG), also work to promote Ghanaian exporters in providing services to the growing European fresh pineapple produce market. (MoFA, 2015), (Kleeman, 2011).

There are varying ways pineapples farmers are using to adapt or cope with changing climate to reduce the effects of its consequences based on their own experiences. It is been generally noted that, not all observed adaptation practices by farmers are deliberately planned as adaptive actions against the climate but that, some are byproducts or secondary benefits from activities unrelated to changing climate (Fujisawa et al., 2015) Moreover, adaptation strategies are becoming increasingly

important issues for promoting pineapple development (Clement et al., 2011). Fujisawa et al., (2015) argue that a combination of the farmers-initiated bottom-up and the institution-led top-down approaches would facilitate more flexible and widely accepted practices to climatic changes with the involvement of a diversity of actors making the entire adaptation process more dynamic and innovative.

Importantly, there is no "one-size fits all "approach for communities to anticipate, plan, and adapt to the changing climate (Hinkel et al., 2010). According to Ndamani and Watanabe (2017), an effective analysis of climate vulnerability in agriculture is fundamental to developing viable adaptation options to manage future anticipated climatic risks and to support adaptation planning. As indicated by Altieri and Koohafkan (2008) and Hassan and Nhemachena (2008), livelihood diversification as response to changing climate is related to reduction in risk associated with crop production. Deressa et al. (2009) also refers to this as risk-mitigating strategies.

The area of pineapple farming has been identified by most studies as a critical factor that significantly contributes and has direct effect on the income of pineapple farmers (Badu-Gyan 2015; Hasan et al., 2010). As noted by Badu-Gyan (2015), the larger the farm size, the difficulty for pineapple farmers to manage production activities and increases the likelihood of the farmers" choice of production practices. Smaller farms were noted in the study to have greater propensity for adopting work intensive production while larger farm size is expected to have a negative influence on farmers" choices of advanced

production systems. The size of land influences the level of input used and also the quantity of output produced. This could imply that, increasing planting area would increase production cost and subsequently reduce income due to climatic changes.

To sustain pineapple production, reduction in pineapple farm size and diversification into other livelihood activities such as production of food and vegetable crops as practiced by the pineapple farmers are response to climatic variation and change that needs to be effectively addressed (Fujisawa et al., 2015). The strategies to enhance smallholder farmers resilience to climate change and variability include modernized irrigation system (Hassan and Nhemachena, 2008), improved meteorological forecast (Easterling et al., 2007), farm insurance (FAO, 2009) as well as good agricultural practices (Easterling et al., 2007). A combination of farmers-initiated bottom-up and institution led top-down approaches would facilitate more flexible and widely accepted adaptations practices as it involves diversity of actors that could make adaptation more dynamic and innovative (Fujisawa et al., 2015).

In conclusion, distinct measures such as introduction to irrigation systems, afforestation in pineapple producing areas, provision of modern technologies such as plastic mulching and capacity building to enhance knowledge to improve production practices would greatly enable them to deal with climate variability and change. This needs to be appropriately considered in adaptation policy for government and research institutions to intervene in the development and promotion of

strategies perceived to be effective in improving production.

Theoretical Underpinning of the Study

The development of smallholder farmers has received much attention throughout the developing world and there is the need to transform agriculture and stimulate wider rural development (Cousins, 2013). The theoretical viewpoints of the rural household faming in the study include; the 'Theory of Change' and 'The theory of competitive advantage'. Theory of Change is one of the underpinning theories reviewed in this study. The theory has evolved since1960s but started to gain more acceptance in the 1990s (Vogel, 2012). The Theory of Change depicts a process that identifies and create partnership between agribusiness and smallholder farmers. The theory applies donor support in the smallholder agriculture livelihood to design proposals and evaluate the impact of development in rural farming (Thornton et al. 2017). Mayne and Johnson (2015) list numerous uses for Theory of Change in design in, managing and accessing interventions. Valters (2014) emphasizes the need for broader commitment to learning from Theory of Change application by individual and organization given complexity of social change across spheres.

It has been adopted to study the effects of pineapple cultivation in rural households in the Ekumfi district because it informs the need to provide a robust framework to address persistent challenges in smallholder farming in sustainable manner. Smallholder farmer need to be empowered to sustain food security and generate income from

farming (Cousins & chikazunga, 2013). It is important that rural landscape is protected because their livelihood depend on it and to achieve it, there is the need to increase the technical knowledge and capacity of the smallholder farmer in the community. This is because the natural resource base is the foundation for rural livelihoods (Okunlola, Ngubane, Cousins & du Toit, 2016). The theory asserts that by providing the smallholder farmers with the right inputs and skills, they are able to increase their productivity and income from their farming activities. This will enhance wide outcomes of growth, enhanced food security, and achieving rural development.

The theory of competitive advantage was also reviewed in the study. The theory of competitive advantage refers to an advantage that a firm has over its competitors which makes products more over and above other competitors (Nagle, 2016). Sachita, (2016) views it as an ability to reduce the overall cost of production while optimising the entire production chain. In reconciling the concept of competitive advantage, Gonzalez-Rodríguez, et al., (2018) clarify completive advantage by emphasizing on the strategic advantage created by strategic resources of the firm over its competitors. (Viswanathan & Satyasai, 1997). However, the farmers' ability to take comparative advantage and adopt new technology is paramount to his sustainability and the livelihood of the rural farmer (Baruwa, 2013). To overcome the challenges in the pineapple farming, there is the need for effective management practices and strategies to make their product competitive and acceptable in the market in order to increase productivity (Egyir, et. ta, 2011).

The theory, however, help to achieve an improved level of livelihood among smallholder farmers in rural areas. The farmers in the study area have abundance fertile land resources and good climate for pineapple cultivation over other producing areas. This therefore put them in an advantageous position to compete with available resources to produce more pineapples to meet the increasing demand with the supply of their produce and improved their wellbeing.

Sustainable Livelihood Framework

The Sustainable Livelihoods (SL) framework is inspired by the work of Robert Chambers in the 1980s, and has been further developed by Chambers, Conway and others in the 1990s (DFID, 2000). The SL framework is a tool for development work, by highlighting how to understand, analyse and describe the main factors that affect the livelihoods of the poor people. According to Scoones (2009), the SL framework is premised on idealistic commitments to poverty reduction, sustainability, and people-oriented approaches to development. He explains that people's livelihoods are influenced by their access to capital assets, in livelihood strategies and outcomes, policies and institutions. According to Farrington (2001), the basic principle of the SLF is that development work has to focus on people.

Which implies that we are to focus on what matters for the poor, how people and their cultures are different, and how this affects the way they understand and appreciate livelihoods. He asserts that the poor should be key actors in identifying the important aspects of their

livelihoods. That is the poor should know what matters to them, and outsiders have to listen to their priorities instead of assuming that their values and ideas are as good as, or better. He sees SLF as a set of principles guiding development interventions and assumes that an intervention has to be evidence-based rather than instigated in top-down fashion without adequate knowledge of the community. DFID (1997), define Sustainable development as efforts on the elimination of poverty and encouragement of economic growth which benefits the poor.

This is done through international support for sustainable development targets and policies that create sustainable livelihoods for the poor people, promote human development and conserve the environment. According to Chambers and Conway (1992), a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; thus, a livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels in the short and long-terms. To Chambers and Conway (1992), livelihood approach puts people at the centre of development.

It works with rural people to help them understand the contribution (positive or negative) that their livelihoods are making to the environment and to promote sustainability.

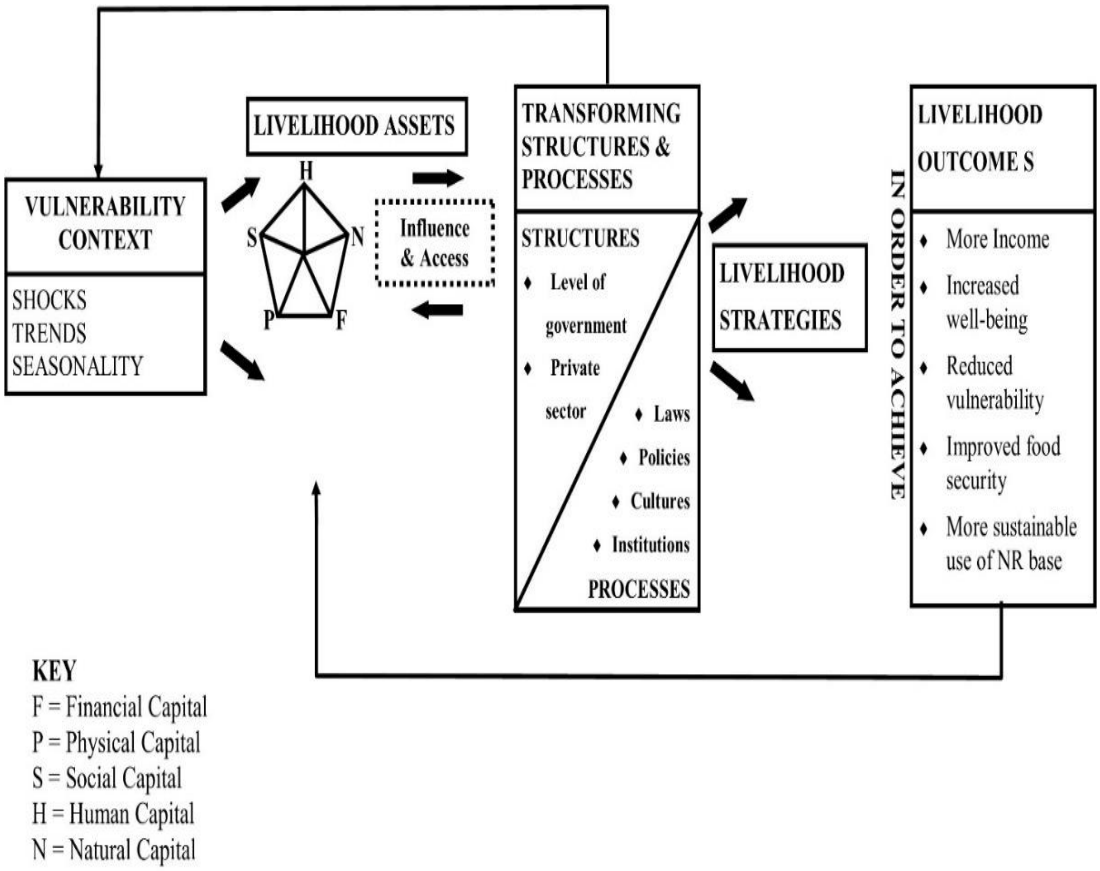


Fig. 1: Conceptual framework on pineapple cultivation and livelihood of farmers. Source: Adopted from (DFID, 1999).

Sustainable Livelihoods Framework (SLF) (Fig. 1) of this study presents a number of factors that impact on livelihood strategies and outcomes for development. It also emphasizes the relationship between the factors linking the variables adopted for this study. (SLF) in (Fig.1) explain a box of a livelihood asset which is (Pineapple) that can be utilized for achieving self-determined outcome of livelihood strategies in order to reduce the Vulnerability of households to shocks, trends, and seasonality.

Access to market is mediated by transforming structures and

institutional processes (i.e., laws, policies and culture), which are also perceived to be contributing factors to the vulnerability of livelihoods of the pineapple farmer in the SLF in (Fig 1). In this study, pineapple production is influenced by background factors such as land, capital institution and technology in SLF (Fig 1). These factors inform the farmers' decision to engage in large- or small-scale farming. Before acquiring the available lands, one needs financial and human capital to start the cultivation processes. Institutional processes and structures oversee the effective transfer of land from one person to the other. In the study area, Chiefs and family heads play were the custodian of lands for the smallholder farming.

Capital in Sustainable Livelihood Framework

SLF in (Fig. 1) is an example of the 'multiple capital' approach where sustainability is considered in terms of available capital (natural, human, social, physical and financial) and an examination of the vulnerability context (trends, shocks and stresses) in which these capitals (or assets) exist. The five principal capitals often suggested as important to livelihoods the farmer is presented in a pentagon in (Fig. 1). Natural capital include soil, water, air resources and environmental services Human capital includes skills, knowledge, labour (includes good health and physical capability). Economic or financial capital includes cash, credit, savings, and other economic assets. Social Capital resources such as social network, relations, affiliations and associations and Physical Capital such as land, infrastructure

(buildings, roads), production equipment and technologies (Scoones, 1998).

These capitals explained contribute greatly in overcoming poverty and improve the individual wellbeing. Access to these assets presents opportunity to smallholders' pineapple farmers in the Ekumfi districts to improve their well-being. Indeed, smallholders' farmers may sacrifice some capital for others if they deem it more appropriate to improve their livelihood. Capital in (SLF) (Fig 1) is therefore a means by which the smallholders' farmers can "engage more fruitfully and meaningfully with their pineapple cultivation and most importantly the capability to change their wellbeing as smallholder farmers. The capital serves as a production process that gives the farmer the power to cultivate and bring about change in society.

Hence these capitals serve as vehicles to make Meaningful living. It is worth noting that these capitals in (SLF) (Fig 1) interact and individual households may reduce or increase some at the expense of others. The clearest example is that financial capital can be used to purchase physical or natural capital such as land and vice versa as physical and natural capitals can be sold. But this interaction between capitals is not limited to the immediate space where people live. Thus, it is necessary to view capitals not in isolation or static but as dynamic.

Vulnerability and Institutional Context

The vulnerability and institutional Context in the SL framework is a systemic and holistic way of describing the factors that affect the

livelihoods of the poor. The framework is an attempt to understand poverty as a multifaceted concept, covering more than just economic growth (Krantz, 2001). The capitals identified in (SLF) (Fig1) assessed the contribution they could make on pineapple cultivation by smallholders and made it necessary to explore the vulnerability context that can affect the pineapple cultivation. The vulnerability context includes the trends over time and space, shocks and stresses. Shock in the (SLF) (Fig1), denote a more sudden pressure on livelihood of the farmers. For instance, a severe flood and drought can seriously affect natural and physical capital of the pineapple farmer in a short period of time.

A locust swarm on the pineapple farm can devastate the farm in a matter of hours and an economic downturn in price of pineapple can take place over years and lead to unemployment for pineapple farmers. This can put an undue stress and long-term economic pressure on the farmers. Though it may be difficult to predict such things economic trends can provide clues. Clearly it is not only a matter of knowing what is happening now but also what the trends will be in the future of pineapple cultivation. In (fig.1) analysis some assets may change little over time (e.g., land and buildings) while others such as cash and social networks can be volatile and depend upon movement of people into and out of the households of the pineapple farmer. For instance, an increase in population density can result in fragmentation of land holding of the pineapple farmers and it can affect their access to lands for pineapple cultivation and income levels.

Vulnerability to shocks can also vary. A drought or flooding for

example will affect natural capital and in turn reduce crop yields, but may have little effect on other capitals. However, in the long run, a severe drought or flooding could impact on a wide range of capitals, including social and human. Climate change as trend is being seen as an important factor that can affect vulnerability of some populations and SLF in (fig 1) explain how pineapple farmers can adapt. It examines the policy and institutions within which these capitals exist, including the legal context and what 'rights' may, or may not, exist in SLF (Ashley et al. 2003).

In (SLF) (Fig1) some capitals may be vulnerable to certain shocks that authorities can act and limit any damage which occurs or perhaps provide assistance. For instance, during bumper harvest which usually result in low patronage of pineapple produce government can by the excess and process them into fruit juice to relieve the famers from incurring post-harvest loses. This will therefore, help the farmers to overcome the shock and sustained their livelihood. This is because post-harvest loses was seen as most difficult challenges facing the farmers in the study area. Also, government or NGOs can put in structures in place to reduce the likelihood of the disaster occurring. For instance, government interventions in the form of extension services can supplement the knowledge base of farmers or provide advice and help with irrigation systems or new variety on modern farming practices. The importance of institutions is often reiterated within the sustainable livelihood literature, and in a variety of contexts that go beyond the examples provided above.

Institutions influence the farmers' access to many of the capitals

as well as opportunities and choices. Thus, policies that help the livelihoods of the poor can also help governments achieve their own policy targets (Challies and Murray, 2011). The SLF in (Fig1) portrays an idealistic commitment to poverty reduction, sustainability and development (Scoones, 2009). In conclusion, it is only when vulnerability and institutional contexts have been considered in the (SLF) in (fig 1), that it can be possible to develop strategies that help enhance livelihood of the pineapple farmer to generate positive livelihood outcomes. The assumption is that these planned outcomes would feedback to enhance livelihood assets and make them more resilient, Tefera (2009). Livelihood's outcomes are better changes in people wellbeing that may include more income, increased well-being, reduced vulnerability, improved food security, and more sustainable use of the natural resources base (IFAD, 2011).

Chapter summary

This chapter reviewed related literature on pineapple cultivation and its effect on farming households. It incorporates conceptual and empirical review. The chapter empirically reviewed the works of other scholars on the challenges facing smallholder pineapple production and the copping strategies for smallholder pineapple farmers related to the study. It analysed the empirical findings of the previous study and compared it to the current findings of the study.

CHAPTER THREE

RESEARCH METHODS

Introduction

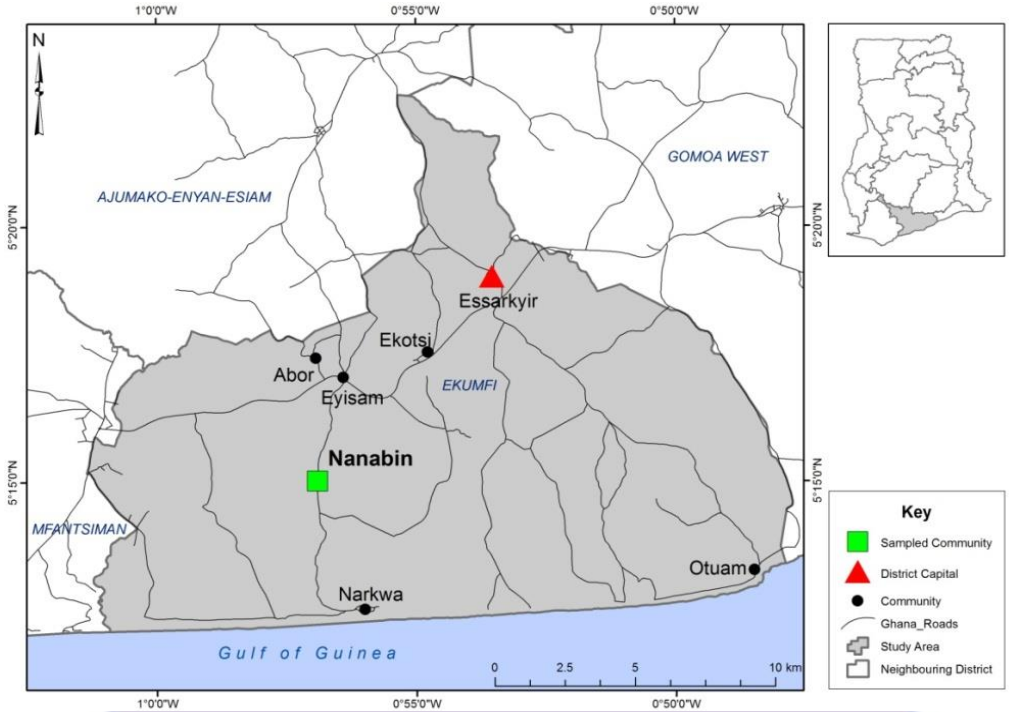
Stenbacka (2001) asserts that the methodology situates the researchers in the empirical world and connects them to specific sites, persons, groups, institutions, physical places and bodies of relevant interpretive materials including documents and archives. It also seeks to address the general planning of the research process, strategies and data collection techniques. Methodology provides the foundation for a research regarding how it is conducted. Therefore, this chapter presents the methodology for the study, focusing on research design, data sources, target population, sample size and sampling procedures, instruments for data collection, pre-testing and methods of data analysis. It further addresses the ethical considerations that guided this study and challenges from the field.

Study Area

The Ekumfi district is one of the twenty administrative districts in the Central region. It was established by a Legislative Instrument (L.I. 2170, 2012), and was carved out of the erstwhile Mfantseman Municipality as a result of its rapidly growing population. As a means of ensuring effective administration and holistic development, Ekumfi became a district and was inaugurated in June, 2012 with Essarkyir as its capital. The population of Ekumfi district, according to the 2010 Population and Housing Census, is 52,231 representing 2.4 percent of

the region's total population. Of the employed population, about 61.4 is engaged in agriculture. Most agriculture households in the district (92.6%) involved in crop farming. Smallholder pineapple farming is the main export cash crop in the districts (GSS, 2010). Other agricultural products such as vegetables are also cultivated in the district.

Ekumfi District lies in the tropical equatorial climatic belt of Ghana and has double maxima rainfall regime with annual rainfall amount of about 1200mm. These climatic conditions therefore favour pineapple cultivation all year round (Dickson and Benneh, 2001). The main towns are Otuam, Essarkyir, Narkwa, Abor, Ekumfi,Ekotsi, Eyisam and Nanabin. However, Nanabin, was selected for the study because it is noted for the mass production of pineapple as a cash crop compared to the other communities in the area. Due to its mass production of pineapple, fruit processing factory has been established for the community under the Government flagship programme, One District, One Factory (1D1F) (MOFA, 2018). Nanabin has a total population of 1456. It has 671 males and 785 females. The community has 317 farming households and 265 houses producing an average household size of 4.1 persons per household in the district (GSS, 2010). A Map of the Ekumfi district is shown in fig 2.



A Map showing Ekumfi District of the study area.

Source: GIS Unit, Department of Geography and Regional Planning, University of Cape Coast, Ghana. (2019).

Research Paradigm

A research paradigm explains the underpinning philosophy of the various methodological approaches and techniques used to investigate a particular phenomenon. It is largely categorized under positivism, interpretivism, and pragmatism. Positivists adhere to the view that only "factual" knowledge gained through observation (the senses), including measurement, is trustworthy. In positivism, the role of the researcher is limited to data collection and interpretation in an objective way. In these types of studies research findings are usually observable and quantifiable (Collins, 2010).

Positivism depends on quantifiable observations that lead to

statistical analyses. It has been noted that "as a philosophy, positivism is in accordance with the empiricist view that knowledge stems from human experience (Collins, 2010). Positivist makes you independent of the research which means that you maintain minimal interaction with your research participants when carrying out your research (Wilson, 2010

According to Orlikowski & Baroudi, (1991), interpretive research assumes that the social world (that is, social relationships, organisations, division of labours) are not 'given'. Rather the world is produced and reinforced by humans through action and interaction. Walsham, (1993) describes the aim and scope of interpretative research as "an understanding of the context of the information system, and the process whereby the information system influences and is influenced by its context.

This study adopted the pragmatist research. Sarantakos (2005) described pragmatism as a philosophical paradigm that combines elements of positivism and interpretivism to address a research problem. Pragmatists' philosophical view is premised on the principle that positivists and interpretivists' views of research are not mutually exclusive, and as a result, could be combined in a single research. Pragmatism gives researchers the freedom to apply different research approaches to different parts of a research problem to address societal issues. The study adopted the pragmatist view of research to allow for both quantitative and qualitative research approaches to address effects of pineapple cultivation on rural households in the study area.

Research Approach

The study adopted the mixed methods research approach to understand the effects of pineapple cultivation on the rural households in the study area. Specifically, methodological triangulation, which refers to the use of multiple methodologies to study a single problem, was employed in this study. This approach is widely used to examine a research problem from more than one viewpoint to enhance the robustness of any study. The justification for adopting this methodological approach is that quantitative methods are intended to achieve breadth of understanding while qualitative methods are, for the most part, intended to achieve depth of understanding (Patton, 2005). The quantitative method answers questions on relationships within measurable variables whilst the qualitative method captures the social relationships and interactions among participants.

According to Creswell, (2009) quantitative research helps to test objectives and theories by examining the relationship among variables. It uses numerical method of describing observations of materials characteristics and analyse data using statistical tools.

Data Sources

The study relied solely on primary data. Questionnaires and interviews formed the methods for collecting primary data for the study. Focus group discussions and observation were also used to complement the other methods of data collection.

Target Population

According to Ogula (2005), a population refers to the group of persons, objects or institutions that define the objects of an investigation with a common characteristic. In this study, the target population comprised farmers who were household heads as well as the Chief, Queen Mother, the Assembly Member and elders of the community under investigation. Others included the Director from the District Agricultural Officer and opinion leaders were also selected for this study. The justification for selecting the respective target populations was as follows: The farmers are members of the community who have vested interesting land for pineapple cultivation and are the respective households' heads in the various households. They are people who also depend on pineapple cultivation for livelihood and survival.

The family heads, in most cases, are the traditional custodians of family land. The District Agricultural Officer works with farmers and companies related to agriculture. He/she helps make better decisions to increase agricultural production and provides education on effective farming practices to farmers in the district. The Assembly Member addresses issues of importance to welfare and acts as the mouthpiece for the entire community regarding developmental initiatives. Finally, the Focus Group Discussion (FGD) participants, comprising older males and older females in the households were expected to provide the needed community level data for the study.

Sampling Size and Sampling Procedure

The district is made up of the following major communities: Essakyir, Eyisam, Abor, Otuam, Esouhyia, Ekoti, Nanabin and many more**.** However, Nanabin was selected for the study becauseit is noted for the mass production of pineapple as compared to the other communities (District Department of Agriculture, 2015). According to Diawetal., (2002), sample sizes depend on the size of the local population. From current national statistical data (GSS; PHC, 2010), Nanabin has a total population of 1456 comprising 671 males and 785 females with 317 farming households. With household heads as the unit of analysis, it was therefore appropriate to use the number of household's heads who are pineapple farmers as the total sample population for this study. Thus, 170 respondents from the various households who are pineapple farmers were selected for questionnaire administration.

Since there is small target population of 170 households' heads, census was used to select all of them for the study. A census is well-organized symatic procedure of gathering, recording and analysing information of about members of a given population. It is more effective for small populations (e.g., 200 or less). Data collection through census method gives opportunity to the investigator to have an intensive study about the problem. The investigator gathers a lot of knowledge through this method. This method ensures higher degree of accuracy in data collection. No other method is accurate like census method when the unit is small and suitable for heterogeneous units.

However, census method of data collection may be inconvenient when there is limited time and inadequate finance.

But it needs to be emphasized that when the unit is small it is no use resorting to a sample survey. A census eliminates sampling error and provides data on all the individuals in the population. The respondents selected are a representative of the total population (Sudman 1976, Glenn 1992, Rao, 1985; Singh &Masuku, 2012). In addition, 19 people, comprising 5 interviewees and 14 participants of two focus groups were selected to provide information to complement the quantitative data.

Pineapple cultivation and its effects on various household farmers were best interpreted by these individuals and groups. The five interviewees consisted of the Chief, Queen Mother, family head, Assembly Member and District Agricultural Officer. Separate focus group discussions were held for seven older males, seven older females of the community. In totality, 189 participants and respondents provided data for the study. Purposive sampling was used to select interviewees for the study.

According to Kumekpor (2002), this sampling technique is used to select unique and informative samples. The justification for adopting this technique was that the participants specified were considered to have insights in smallholder pineapple cultivation and could make meaningful contributions to the study. Convenience sampling technique was used to select members for the focus group discussion. It is done by selecting between older male and female between the ages

of 20 and 60 who are pineapple farmers among the household heads who were willing to participate in the study. It is non probability sampling where members of the target population that meet certain criteria, such as easy accessibility, geographical proximity and availability at a given time are included in the study (Daniel,2011).The justification for adopting this sampling technique is that it is less expensive, less time consuming and most convenient of all sampling techniques (Malhota& Birks,2006).

Data Collection Instruments

The instruments used to collect data from the respondents were the questionnaire, interview and focus group discussion guides as well as an observation guide. (See the appendix). These instruments are briefly explained in the way they were structured below.

Questionnaire

According to Bryman and Bell, (2011) questionnaire refers to documents that include a series of open and closed ended questions to which the respondent is invited to provide answers. It is a data collection instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Research questionnaires may be distributed to the potential respondents by post, e-mail, as an online questionnaire, or face-to-face by hand. Questionnaire was used to collect data from the farmers. Questionnaires were chosen because they constitute the most appropriate technique for deriving information from the large number

of respondents involved in this study.

The questionnaire comprised both closed and open-ended questions. In the case of open- ended questions, the respondents were free to construct their own responses. The closed-ended questions were used to help the respondents choose the options with which they agreed most. The questionnaire was sub-divided into sections addressing the research objectives and questions. It covered the demographics of individual smallholder farmers, household heads and factors informing the effects of pineapple cultivation on the smallholder farmers.

Interview Guide

Selected community leaders were interviewed to document their views on pineapple cultivation and its effects on smallholder farmers. An interview guide was structured to cover pineapple cultivation and other issues that were deemed important to obtain valid information in providing answers to the research questions and the objectives of this study. The interview guide for this study served as the main qualitative research instrument. According to O'Neill, (2003) interviews are interactive exercises that engage participants in thinking and concentration, which facilitate uncovering issues or opinions of which participants are not fully aware or not able to directly verbalize. Interviews often provide information that cannot be obtained by any other means.

Focus Group Discussion

Focus group discussions were organized for older males and older females in the study area. The discussions were aimed at eliciting information on the study topic within a group environment. There were

two focus group discussions comprising seven participants in each group with one facilitator as the moderator and a note taker. The focus group discussions were conducted to complement the responses of interviews and questionnaires. Sarantakos (1997), suggests that due to the group environment, focus group discussions allow significant points of view to be presented in a real, emotional and summary form as spontaneous expressions.

Observation

The researcher also employed structured observation to collect information on community resources and infrastructural development that were deemed relevant for the study. The design of the community settlement pattern as well as the state and standard of infrastructure was also considered to portray the type and nature of the community. Some resources targeted included houses, pineapple farms, schools and the community clinic. These resources were selected because they portrayed resources generated from income through pineapple cultivation.

The justification is that observations helped to identify how people in the setting interact, prioritized in that setting and to learn what is important to the people in the social setting under study in order to ask appropriate questions which best help answer the research questions (Schensul, Schensul, & LeCompte, (1999).

Validation of Data

Criticisms of the lack of objectivity and generalizability are often

associated with the data collection (Phillimore and Goodson, 2004). According to Veal (2011), Bryman (2012) and Loh (2013) trustworthiness consists of four different components credibility: the validity of the findings; transferability: the applicability of the findings in other contexts; dependability: reliability of the findings at another time; and confirmability: objectivity of the researcher while carrying out the research. The combinations of these four terms constitute towards the trustworthiness criteria, thus forming conventional pillars for qualitative methodology (Phillimore & Goodson,2004).

In order to ensure trustworthiness of the collected data validity, reliability and objectivity were adhered to in this study. Credibility is seen as the most important aspect in establishing trustworthiness and it help the researcher to link the research study's findings with reality in order to the demonstrate the truth of the research findings (Bryman, 2012). Confirmability helps to verify how the findings are shaped by participants more so than they are shaped by the researcher. It ensures that the level of confidence of the researcher study's' findings are based on the participants' narratives and words rather than potential researcher biases (Marshall and Rossman, 2006). A thorough process of data collection and the results of the data collection is the key to justifying and assuring that trustworthiness exists in the study" (Henderson, 2006 cited Veal, 2011).

According to Shenton (2004) and Porter (2007) one way to gain credibility is to cross-reference similar strategies used by previous researchers, as that will help to eliminate the possibility of invalid

findings. Also, by investigating the limitations of other authors in terms of trustworthiness, the researcher would be able to format a more suitable method to collect and analyse data. In addition, the researcher will ensure trustworthiness by engaging oneself with the culture of the people. The researcher will get better understanding of the epistemology of the participants to guide him to remain objective during data collection and analysis Shenton, (2004). Also, by cross checking findings of other researchers, it is possible that the researchers will gain insight to transferability.

Often, the researcher may stumble across blind spots when being overly focused on their own research; peer feedback might not only help to increase validity of the research, but recommend your findings in other contexts. To ensure dependability in this study, the researcher interacted with participants through interviews and the administration of questionnaires to attain adequate information on the objectives of the study Responses received from participants provided insights and direction to pursue subsequent interviews. Data interpretation was anchored in the context of the respondents and participants through value explication while 'holding-off'' the researcher's own biases and prejudices in order to ensure conformity of the study.

Although, these are measures to combat limitations in the data collection and analysis process, the researcher is human and is bound to make mistakes. However, these elements of trustworthiness will be ensured to obtain the most reliable findings possible for the research.

Therefore, the outcome of the study depicted a true reflection of the data collected.

Pre-testing

The practice of pretesting is highly regarded as an effective technique for improving validity in data collection procedures and the interpretation of findings (De Vaus & de Vaus, 2013). By definition, pre- testing involves simulating the formal data collection process on a small scale to identify practical problems with regard to data collection instruments, sessions, and methodology. Therefore, Eyisam, a community in the Ekumfi District, which portrayed similar characteristics as the selected community, was selected for the pre-testing of the questionnaire**.** According to Gall, Gall and Borg, (2007) the purpose of the pilot study was to understand and review the questions and objectives underlying the study and to statistically assess the internal consistency of the research instruments. The instruments contained questions on smallholder pineapple cultivation and its effects on the well-being of the farmers in the communities. The researcher conducted a pilot study with 50 questionnaires. From statistical computation of the sample tested the data provided reliability statistics of 0.714, which implies the was positive consistency in the reliability of the objectives of the study. The pre-test really revealed to the researcher on attitude of the respondent in research. This attitude of the participants in the pre-test influenced the researcher positively in the study area.

Data Collection Procedure

An introductory letter was obtained from the Department of Geography Regional Planning at the University of Cape Coast to seek consent from the respondents and to participate in the study. Also, community entry protocols were observed as part of the data collection process to officially introduce the researcher to the Chief and his council of elders. In eliciting data from respondents, questionnaires were administered to170 pineapple farmers. Respondents were visited in their homes and various houses until the last respondent was identified. The questionnaires were administered in the Fanti language. The questionnaire administration for each respondent lasted between 20 and 30minutes. The interviews were conducted at different venues.

The community participants (Chief, Queen Mother, family head, elders, and the Assembly Member) were interviewed in their homes while the Agricultural Director was interviewed at his workplace. All interviews were done on one-on-one basis. Robson (2002) argues that one -on-one interviews offer the possibility of modifying one's line of enquiry, following up interesting responses and investigating the underlying interpretations of events. Rapport was established with participants prior to the interviews.

As intimated by Silverman (2006), the open- ended questions allowed for more flexibility in delving in to the perceptions and feelings of participants. Follow-up questions were asked as a form of probes and prompts. The duration of the interviews varied between participants depending on the intensity of the conversation and the

environment but it was generally between 30 and 50 minutes. For the focus group discussions, participants were grouped according to their similar characteristics such as age and gender. Older male and older females were identified within the study area to elicit community level responses on the objectives of the study. When participants were selected through the above arrangements, a convenient location was made available by the Assembly Member where they were seated and the purpose of the study explained to them.

Three different days were scheduled for the discussions and participants consented to meet the researcher during evenings. Each group comprised seven participants. Questions were asked in Fanti and the responses recorded accordingly. Participants responded to the issues raised in line with the objectives of the study. The discussions lasted between 60 and 80 minutes. On collecting data through observation, the researcher took pictures on pineapple plantations, pineapple businesses and infrastructural developments.

This strategy was adopted to validate the claim of the development in infrastructure and livelihoods related to the pineapple cultivation in the community. The verbal, non-verbal and situational details gathered from the observation proved to be an appropriate technique for getting an insight into the real-life situations of the respondents and participants. The researcher had a field note in which all other observations were recorded across the entire duration of the study.

Data Processing and Analysis

The quantitative data collected from the field was coded and processed using the Statistical Product for Service Solution (Version 26). Frequencies and percentages were employed to present the data based on the specific objectives of the study. The interviews and focus group discussions were recorded and transcribed verbatim in English with pseudonyms attached to individual responses in order to protect the identities of participants. The data was then coded after trends had been identified based on the emerging themes according to the research objective.

Ethical consideration

Ethical matters are the socio-cultural and psychological concerns, dilemmas and conflicts that need to be considered through the process of the research; and these may comprise confidentiality, inconspicuousness, and privacy (Neuman, 1994; Punch, 1998). All research studies present a number of ethical and moral dilemmas which must be identified and addressed in order to protect all respondents and participants from potential harm (Seidman, 2013). Ethical issues were strictly adhered to in this study.

Chapter summary

This chapter provides information on the research design appropriate for the study, how the primary data for the study was collected, organized, analysed and presented for easy comprehension. The chapter also presents information

on the scientific approach to adopt in terms of approach to data needs, statistical techniques and systematic enquiry into the investigation under consideration.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results of the study and the discussion of findings, based on the research objectives. The first section of the chapter focused on the socio-demographic characteristics of the respondents and participants that were surveyed. The rest of the chapter addressed the objectives of the study, which were to examine access to land for pineapple cultivation, assess the positive and the negative effects of pineapple cultivation on farming households, assess the challenges of the farmers in the pineapple cultivation and explore strategies to overcome the challenges.

Response Rate

According to Mugenda and Mugenda (2003), a response rate represents the number of respondents who participated in a given study. The authors claimed that a response rate of 70% and above is excellent and suitable for analysis, 60% is very good, and 50% is good, and below 50% is not appropriate for quantitative research analysis. Out of the one hundred and seventy (170) questionnaires that were distributed to the participants of the study, only one hundred and forty (140) respondents representing 82% response rate, fully completed and returned the questionnaire to the researcher. The remaining 30 questionnaires were as a result of non-response or incompleteness of the questionnaire from the participants and were set aside. Based on the criterion of the aforesaid researchers, the obtained response rate was appropriate and applicable for this study.

Socio-Demographic Characteristics of Respondents

As indicated by Pearlin (1989), an individual's way of perceiving things around him/her could be the result of the interplay of the interactions of a number of familial, personal and social background factors which are rooted in his/her beliefs, experiences and interactions.Therefore, the demographic characteristics of the respondents relevant to study are gender, age, level of education, household annual income, household size, marital status, religious affiliation, residential status and ethnicity (see Table 1).

The findings indicated that majority of respondents were males 87(62.1%) whilst the remaining (37.9%) were females. Again, the majority of the respondents (60.6%) were aged less than 50 years, although relatively a sizable number were between the ages of 50-59 years (25.7%)

On the levels of formal education, the study revealed that the majority of the respondents had basic education certificate representing 76 (54.3%) whilst a relatively 2 (1.4%) had vocational and technical education certificates. This information revealed low level of education among the people of Nanabin community. Again, all the respondents (100%) claimed that their annual income from pineapple cultivation spans over GHC 1000. These results showed how profitable pineapple business was to the smallholder farmers. Findings on the households' size of the respondent revealed that the community had large house households, with 64.3% having house size more than (5) people.

With regards to the housing of these farmers, the majority of the respondents 82(58.6%) were living in mud brick building, while the remaining 58(41.4%) resided in clement block buildings. The study revealed that 101(72.1%) of the respondents were married, and were Christians (62.5%). On

the residential status of the respondents, the results indicated that the majority representing (88. %) were indigenes, and were Fantis (92.9), whiles the remaining 16(11.4%) of the respondents were migrants.

Table 1: Socio-Demographic Characteristics of Respondents

Variable	Attributes	Frequency (N)	Percent (%)
Gender	Male	87	62.1
	Female	53	37.9
Age	20-29years	24	17.1
	30-39years	30	21.4
	40-49years	31	22.1
	50-59years	36	25.7
	60years & above	19	13.6
Level of formal Ed.	Basic	76	54.3
	Secondary	21	15.0
	Tech/Voc	2	1.4
	None	41	29.3
Hse. Annual Inc	Above 1000	140	100
Household Size	1-5	50	35.7
	6-10	51	36.4
	11-15	33	23.6

	16-20	5	3.6
	21 and above	1	0.70
House Pattern	Cement block building	58	41.4
	Mud-bricks building	82	58.6
Marital Status	Single	17	12.1
	Married	101	72.1
	Divorced	8	5.7
	Separated	14	10
Religious Affiliation	Christianity	88	62.5
	Islam	33	23.61
	African tradition	19	3.6
Residential Status	Migrant	16	11.4
	Indigene	124	88.6
Ethnicity	Fanti	130	92.9
	Ashanti	9	6.4
	Ewe	1	0.70
Totals		**140**	**100**

Source: Field Data, Aidoo (2020)

Access to Land for Pineapple Cultivation

The first objective of the study was to investigate how farmers access land for pineapple cultivation. Descriptive statistics such as frequencies and percentages were employed to analyse the findings of this objective (Table, 2).

Table 2: Access to Land for Pineapple Cultivation

Statement	Frequency (N)	Percent (%)
Who are the custodians of the land in this community?		
Chiefs	25	17.9
Family heads/ clans	113	80.7
Private owners	2	1.4
Total	**140**	**100**
Do you own Agriculture land?		
Yes	65	46.4
No	75	53.1
Total	**140**	**100**
If yes how many acres of agricultural land do you own?		
1-5acres	10	15.4
6-10acres	30	46.2
11-15acres	25	38.4
Total	**65**	**100**
If yes how many acres of land have you used for pineapple cultivation?		
Less than 5acres	17	26.2
5-10acres	34	52.3
More than 10acres	14	21.5
Total	**65**	
How did you acquire it?		
Purchased	8	12.3
Inherited	22	33.8
Family land	20	30.8
Sharecropping	15	23.1
Total	**65**	**100**
If no to question 12, by what means do you access land for farming?		
Lease	23	30.7
Sharecropping	31	41.3

Rented	13	17.3
Other	8	10.7
Total	**75**	**100**
Do you Cultivate Pineapple on your land?		
Yes	128	91.4
No	12	8.6
Total	**140**	**100**
Compared with the past ten years, how will you describe the current acquisition of land for Pineapple Cultivation?		
Increased	140	100
Decreased	0	0
Total	**140**	**100**
How would you estimate land acquisition for Pineapple cultivation in the community in the next ten years?		
Increased	140	100
Decreased	0	0
Total	**140**	**100**
What is your average yield of pineapple per acre**?**		
Less than 3,000	13	9.3
3,000-6000	27	19.2
6,000-9,000	30	21.4
9,000-12,000	40	28.6
12,000-15,000	25	17.9
16,000 and above	5	3.6
Totals	**140**	**100**

Source: Field Data, Aidoo (2020)

From Table 2, it was revealed that respondents had varied views regarding who the custodians of the lands in the Nanabin community. Majority of the respondent 113(80.7%) claimed that family heads/ clans were the custodians of major lands, whiles only 2(1.4%) of the respondents disclosed that private owners were the custodian of lands in the community. Regarding the ownership of land for agricultural purposes, 65(46.4%) of the respondents

maintained that they owned agricultural land in the community, with more than (53.1%) of them claiming they did not own agricultural land.

Respondents who claimed having owned agricultural land were asked to indicate how they acquired it. On this, 22(33.8%) of the respondents confirmed they inherited the land, while 23.1% acquired it through sharecropping. Only 8(12.3%) purchased the land they owned. Similarly, those who owned land were asked to indicate the number of acres they possessed. While 30(46.2%) of the respondents disclosed that they owned 6-10 acres of land, a considerable number 10(14.4%) of the respondents disclosed that they own about 1-5acres of land. Subsequently, respondents were asked about the portion of their agricultural lands that was used for the cultivation of pineapples. Notably, 34(52.3%) of the respondents confirmed that they cultivated pineapple on 5-10 acres of land, while 14(21.5%) of the respondents also averred that they cultivate pineapple on more than 10 acres of land.

For the respondents who claimed they did not own agricultural land, they were asked to disclose the means used to secure land for pineapple cultivation. Table 2; clearly showed that about half (41.3%) of the respondents claimed they secured their pineapple farmland through sharecropping agreement while about 30.7% acquired on lease. Again, all the respondents were asked whether they cultivate pineapple on their land (whether owned or not). Here, the majority of the respondents 128(91.4%) averred that they cultivated pineapples on their farmland, while 12(8.6%) of the remaining indicated that they did not cultivate pineapple on their land. Table two shows access to land for pineapple cultivation and plates 1, 2 and 3 shows some acres of farmlands

being used for pineapple cultivation by smallholder farmers in the Nanabin community.

Plate 1: Land prepared for pineapple cultivation at Nanabin

Source : Author's fieldwork, 2020

Plate 2: Pineapple farm site at Nanabin

Source: Author's fieldwork, 2020

Plate 3: Another Pineapple Plantation at Nanabin

Source: Author's fieldwork, 2020

The data from the farmers supports the assertion of the key informants who were interviewed for the study. For example, one key informant had this to say about access to land:

> '*There have not been any major changes in the nature of land acquisition and its custodianship. Access to land for pineapple cultivation is executed around some communally agreed tenets. These tenets encompass purchase, lease, sharecropping, inheritance, gift and rent. A blend of any of these tenets enhances the transfer of land from one person to the other for pineapple cultivation in Nanabin community'* (Family head, June, 2020).

The finding is also in line with the conceptual framework adopted for this study. The framework presents the pineapple cultivation as a livelihood activity for the rural farmers, with land being a major asset. Fundamental to this framework is

a box of a livelihood asset (land) that can be utilized for achieving self-determined outcomes of livelihood strategies in order to reduce the vulnerability of households. Thus, natural capital such as land, serves as greatest capital asset in the livelihood of the smallholder farmer. It is only when the farmer has access to a parcel of land that the individual can cultivate pineapple to earn an income and improve their wellbeing.

Comparing land acquisition for pineapple cultivation in the past ten years, all the respondents 140(100%) submitted that land acquisition had increased. Similarly, all the respondents disclosed that, in the next ten (10) years, land acquisition for pineapple cultivation would increase. This result may be attributed to the presence of pineapple processing factory located in the Nanabin community under government flagship programme of One District, One Factory (1D1F). The establishment of pineapple factory gingered farmers to envisage an expansion in their pineapple cultivation to feed the factory all year round and improve their livelihoods. With the average yield of pineapple per acre, it was evident from Table 2 that about 40(28.6%) of the respondents alluded that their average yield spanned from 9,000-12,000 pineapples per acre annually, while only 5 of the respondents indicated that their average of pineapple yield per acre spanned over 16,000 and above (3.6%). These findings clearly showed that the average yield of pineapple per acre of land was encouraging and could be improved if more access to land for pineapple cultivation and right farm inputs were used given the rich nature of the agricultural lands in the Nanabin enclave.

A key informant supported the assertion by indicating that:

> '*There is going to be a drastic surge in land acquisition for pineapple cultivation in the next ten years, and that the current cost for an acre which is sold at Ghc. 200.00 will increase to Ghc. 250.00 depending on the location of the land. Again, he asserts that more commercial farmers are going to troop in the district to benefits from the market due establishment of processing factory and are prepare to pay more hence, land owners are coaxed to release land'* (Assembly man, June, 2020).

Bugri and Knapman, (2017) espouse in their findings that mounting pressures on agricultural land over the last ten years have had a significant impact on the way that land is accessed, managed and farmed. This rapid pace of change, according to the authors, has altered the rural landscape, causing smallholder farmers to farm on smaller fragmented pieces of land and switching their crop choices as well as changing community-based land governance practices. These effects, in turn, have had social and economic repercussions, including the people of Nanabin in Ekumfi district of Ghana

Positive Effects of Pineapple Cultivation

This section of the study sought to examine the positive effects of pineapple cultivation on rural households. To be able to establish the positive impact of pineapple cultivation on respective households in the Nanabin community, descriptive statistics mainly frequencies and percentages were employed. Results from Table3 showed that majority of the respondents who cultivate pineapple were indigenes, representing 129(92.1%) while 11(7.9%) respondents were migrant investors in the community. Again, on the issue of whether pineapple cultivation provides gainful employment, the vast majority

of respondents 131(93.9%) averred that pineapple cultivation is a gainful venture while 9(6.4%) respondents went contrary on that statement. In line with the existing literature, Jari, (2009) submitted that smallholder pineapple farmers' participation in market is very vital for sustaining economic growth, achieving food security and poverty alleviation. A participant confirmed the positive impacts of pineapple cultivation in the interview.

> *'Pineapple cultivation provides employment, generates some income and improved their social and economic wellbeing'* (Assembly man, June, 2020).

Therefore, pineapple production plays a crucial role in rural households in meeting the overall goal of food security, poverty alleviation and sustainable agriculture, especially among smallholder farmers in the community.

Table 3: Positive Effects of Pineapple Cultivation on the Rural Household

Statement	**Frequency (N)**	**Percent (%)**
Who are those involved in pineapple cultivation in the community?		
Indigenes	129	92.1
Investors who are not from the community	11	7.9
Total	**140**	**100**
Does pineapple cultivation provide gainful employment?		
Yes	131	93.6
No	9	6.4
Total	**140**	**100**
How many years have you been cultivating pineapple?		
Less than 5years	30	21.4
5-10years	60	42.9

More than 10years	50	35.7
Total	**140**	**100**
How much of your household income come from pineapple cultivation?		
Small amount of the income	28	20
Large amount of the income	112	80
Total	**140**	**100**
What portion of your household income do you save per harvest since you entered into pineapple cultivation?		
Small amount of the income	47	33.6
Large amount of the income	93	66.4
Total	**140**	**100**
Has pineapple cultivation improved your wellbeing?		
Yes	138	98.6
No	2	1.4
Total	**140**	**100**
If yes, what are some of the benefits? (thick all that apply)		
Improved income	110	40.4
Increased social status	30	11.03
Improved marriage life	68	25.00
Improved health status	40	14.71
Afford quality education	13	4.7
Received farmers day honour	11	4.04
Total	**272***	**100**
Have you been able to acquire any personal assets, which you could not acquire prior to becoming a pineapple farmer?		
Yes	132	94.3
No	8	5.7
Totals	**140**	**100**
If yes, what are these assets (thick all that apply)		
Bought motorbikes	38	10.38
Bought Bicycle	45	12.30
Bought a car	20	5.46
Built a house	96	26.23

Acquired a piece of land	38	10.38
Bought farm equipment	129	35.25
Totals	**366***	**100**

Have you been able to acquire new equipment from your pineapple farming?

Yes	137	97.9
No	3	2.1
Totals	**140**	**100**

If yes, what type of equipment? (thick all that apply)

Cutlass and Hoes	137	49.28
Knapsack Spray	118	42.44
Tractor	3	1.08
Vehicle	20	7.19
Tot al	**2 78***	**100**

***Higher than total respondents due to multiple response.

Source Field Data, Aidoo (2020**)**

Also, regarding the number of years respondents have been in pineapple cultivation, the majority of the respondents 60(42.9%) disclosed that they have been in pineapple cultivation for 5-10years, with a relatively lower number of the respondents 30(21.4%) disclosing that they have less than 5years in pineapple cultivation. This implies that more than half of the respondents have been the pineapple cultivation for quite a longer time. Again, greater portion of the respondents 112(80%) submitted that a larger portion of their household income comes from pineapple cultivation, while the remaining 28(20%) of the respondents also unveiled that only a small portion of their household income comes from pineapples cultivation. Similarly, 93(66.4%) of the respondents

claimed that they have been able to save a larger portion of their income from pineapple cultivation.

Concerning the question on whether pineapple cultivation has improved the wellbeing of people of Nanabin, a vast majority, 138(98.6%) of the respondents claimed their life has been better off since they ventured into the pineapple cultivation. A follow-up question on this was for respondents to disclose some of the benefits they have been able to acquire since they ventured into pineapple cultivation. With this, 110(40.44%) of the respondents mentioned that there had been an improvement in their annual income following pineapple cultivation. While a considerable number of 11(4.04%) of the respondents averred that they had received farmers day honor as a benefit from pineapple cultivation.

More importantly, 132(94.3%) of the respondents disclosed that they had been able to acquire some personal assets, which they could not acquire prior to becoming pineapple farmers. Similarly, on the asset acquisition, 129(35.25%) of the respondents revealed that they acquired some farm equipment, while 20(5.46%) of the respondents also submitted that they had purchased car from pineapple farming. Regarding the question on whether farmers have been able to acquire new equipment form their pineapple farming. A greater percentage of the farmers 137(97.9%) responded in affirmative. Besides, 137 of the respondents (49.28%) claimed they acquired new equipment such as cutlasses, hoes, while (1.08%) had acquired a tractor. The findings clearly showed that pineapple cultivation had impacted positively on the wellbeing of farmers in the Nanabin community. It provided a gainful employment and relieved many households from poverty.

A key informant revealed that:

'*they have been able to cater for their wards' school fees, built house, bought many clothes, pay for their medical bills whenever they visit any health care facility this and many other benefits according to them were accrued from the pineapple cultivation*' (Family head, June 2020).

The positive effects of pineapple cultivation were evident in table 3 and observed from individual smallholder infrastructural developments as seen in Plates 4, 5 and 6. On request, three pineapple farmers took the researcher to their building sites and they confirmed they realized the properties from profit accrued from pineapple cultivation.

Plate 4: A completed house built from income obtained from pineapple cultivation

Source: Author's fieldwork, 2020

Plate 5: Another house built from income obtained from pineapple cultivation

Source: Author's fieldwork, 2020

Plate 6: Uncompleted house being built from income obtained from pineapple cultivation

Source: Author's fieldwork, 2020

The empirical finding of this study is in line with Scoones' (2009) conceptual framework adopted for this study. The framework presents pineapple cultivation as an asset that provides employment to the rural farmers to earn a livelihood. In the framework, pineapple cultivation is influenced by the human capital's asset suggested as important to livelihoods presented in SLF in (Fig. 1). Human capital assets such as skills, knowledge, labour resources contribute greatly and provide needed employment avenue to the rural farmer and provide opportunity for the smallholders' farmers in overcoming poverty and improves their wellbeing. Since majority of the various households in the community cultivate pineapple for a living it has helped to improved their livelihoods and decrease their vulnerability to different kinds of shocks.

In addition to the above, Likert scale was used to examine the positive effects of pineapple cultivation on farming households (Table 4). The descriptive statistics used were the mean (M) and standard deviation (SD). The cut-off points for the mean were given as follows: 0.1-1.49= strongly disagree: 1.5-2.49=Disagree; 2.5-3.49=Neutral; 3.5-4.49=Agree; 4.5-5.0=strongly agree. This made it easy for appropriate conclusions to be made regarding the state of respondents' agreement on the various indicators measuring the positive effects of pineapple cultivation in the context of this study.

Table 4: Descriptive Statistics on the Positive Effect of Pineapple Cultivation on Farming Households

Improvement in:	Mean	Std. Deviation
Accommodation/shelter	4.3478	.83406
Food security	4.3357	.63030
Ability to afford health care services	4.3597	.68108

Ability to afford quality education for my children	4.1714	.79515
Ability to afford clothing	4.4429	1.62831
Marriage life	4.0500	.78954
Social status	3.9786	.80883
Family life	4.1286	.98801
Economic status	4.0429	.80351

Source: Field Data, Aidoo (2020)

It was discovered in the study that, the respondents agreed there had been an improvement in their accommodation / shelter (Mean= 4.3478, SD= .83406), food security (Mean= 4.3357, SD= .63030), health care services (Mean= 4.3597, SD= .68108). Again, the study revealed the respondents agreed they could now better afford quality education for their children (Mean= 4.1714, SD= .79515) as well as clothing (Mean= 4.4429, SD= 1.62831). The respondents further indicated that there had been an improvement in their marriage life (Mean= 4.0500, SD= .78954) and family life in general (Mean= 4.1286, SD= .98801). It was revealed in the study that, the respondents were socially recognized in the community (Mean= 3.9786, SD= .80883). More so, it was discovered that the economic status of the respondents had improved following pineapple cultivation (Mean= 4.0429, SD= .80351).

Again, respondents were asked to rate which of the positive effects they considered most important to their households and why. On this, majority of the respondents 45(32.1%) claimed that food security is the most important factor to their households, followed by accommodation (19.3%). Their reason was that

it sustained life and empowered them in their daily activities as confirmed by a key informant as follows:

> *'Market participation in pineapple has helped most smallholder farmers to achieve food security because the income they derives from the sale of their output enabled them to purchase the staple food.Food security and shelter were the most important needs that they sought to meet'*. (Family head, June, 2020).

The implications of these findings were that food security and shelter were the most important needs that respondents of the study sought to meet.

Table 5: The most important positive impact of pineapple cultivation

Improvement in:	Frequency (N)	Percent (%)
Food security	45	32.1
Accommodation / Shelter	27	19.3
Ability to afford education for my children	23	16.4
Economic status	17	12.1
Ability to afford health care services	13	9.3
Family life	7	5.0
Marriage life	8	5.7
Totals	**140**	**100**

Source: Field Data, Aidoo (2020)

The findings validate the submission made by (FAOSTAT; (2011) and (All Africa; (2011) who contended that pineapple production have served as an important tool for transformational agenda in Ghana and achieving self-sufficiency in food security, job creation, and launch the

country on the path of self-sufficiency. Inference here was that pineapple cultivation really impacts the rural households positively.

Negative Effects of Pineapple Cultivation

This section examines the negative effects of pineapple cultivation on the smallholder farmers. Using a Likert scale, respondents were asked to indicate their level of agreement with some statements measuring the negative effects of pineapple cultivation on their households and community in general. This was in line with the second objective of the study. As with the positive effects, the study used the mean (M) and standard deviation (SD), with the cut-off points for the mean given as follows: 0.1-1.49= strongly disagree: 1.5-2.49=Disagree; 2.5-3.49=Neutral; 3.5-4.49=Agree; 4.5-5.0=strongly agree. The results, as presented in Table 6, show that the majority of the respondents were neutral regarding whether there had been a surge in land disputes for pineapple cultivation (Mean=2.60, SD=1.40). Similarly, a larger portion of the respondents were indecisive on whether there had been an increase in litigation on lands for pineapple cultivation (Mean=2.57, SD=1.22). Table 6 further showed that the respondents disagreed that pineapple cultivation had contributed to social vice such as alcoholism, stealing robbery, etc. (Mean= 2.30, SD=1.01). Concerning teenage pregnancy, the respondents indicated that there was no such case in the community (Mean=2.23; SD=.87) that could be attributed to the cultivation of pineapple. However, with regards to skin rashes and surge in other diseases the majority of the respondents claimed they had been confronted with this disease ever since they ventured into pineapple cultivation (Mean=3.43; SD= 1.32) (Mean = 2.84; SD= 2.78).

Table 6: Negative Effect of Pineapple Cultivation on Farming Households and the community

Item	Mean	Std. Deviation
Increase in land disputes	2.6000	1.40298
Increase in Litigation	2.5714	1.21822
Increase divorce	2.0214	.85215
Increase cost of living	2.7571	1.18669
School drops out	1.9143	.91734
Social vice (alcoholism, stealing, robbery etc.	2.3000	1.00860
Teenage pregnancy	2.2286	.86783
Skin rashes	3.4286	1.31561
Other diseases	2.8429	2.77779

Source: Field Data, Aidoo (2020)

Respondents were also asked to mention, among the negative effects, which one they considered to have the greatest effect on their households. It was found that 41(29.3%) of respondents claimed that none of the above effects was associated with pineapple cultivation. However, 27.1% and 19.3% mentioned other diseases and skin rashes respectively, as the most dominant negative effects associated with pineapple cultivation in the community.

Table 7: Most Dominant negative effect of pineapple cultivation

Item	Frequency (N)	Percent (%)
None	41	29.3
Other Diseases	38	27.1
Skin Rashes	27	19.3
Litigation	12	8.6
Land Disputes	10	7.1
Cost of living	9	6.4
Divorce	2	1.4
School Drop out	1	0.7
Totals	**140**	**100**

Source: Field Data, Aidoo (2020)

A key informant during the interview corroborated the prevalence of diseases in the community;

'Pineapple cultivation has increased skin rashes and other skin related diseases in the community' (Male participants in the focus group, June, 2020).

Another key informant also explained that:

'It has reduced the desire of the youth to pursue high education after completing basic school. Due to profitable nature of pineapple cultivation, youth from the community do not attach importance to furthering their education. Hence, there is high level of illiteracy in the Nanabin community which has eventually retarded the growth of the community' (Assembly man, June, 2020).

Although, only 15% of the respondents mentioned land dispute or litigation associated with pineapple cultivation, however a family head in the community during the interview disclosed that,

> *'There have been series of land disputes and litigation among family heads and the farmers over the years and some land issues in the community are still pending in court for judgments'* (Family heads, June, 2020).

In fact, as Rosen (2014) has indicated, Landlords and powerful individuals in the community use disputes as a way to evict poor families from their land. The incidence of land litigation and disputes in the study community present a shock to the smallholder farmer that is likely to worsen their livelihood outcomes in the projected future (Scoones, 2009). Thus, increasing demand for land for pineapple cultivation in the study community may serve as a threat to livelihood outcomes, especially when land disputes are not properly resolved. Land disputes affect the social harmony of the community members, because land remains a key determinant in the social and economic status for rural livelihoods; hence its litigations in any form will have effects on the smallholder farmers in the community. Land remains a key determinant in the social and economic status for rural livelihoods.

Challenges of the Farmers in the Pineapple Cultivation

This section of the study provides findings relating to the third specific research objective of the study on assessing the challenges of the farmers in the pineapple cultivation. The challenges were measured using nine items. The responses were measured on a 5-point Likert scale such that SD = Strongly

Disagree, D = Disagree, N= Neural, A= Agree, and SA = Strongly Agree to the issues. The main variable was evaluated in terms of descriptive statistics such as frequencies, mean and standard deviation. The cut-off points for the means were given as follows: 0.1-1.49= strongly disagree: 1.5-2.49=Disagree; 2.5-3.49=Neutral; 3.5-4.49=Agree; 4.5-5.0=strongly agree. The results are presented in Table 8.

Table 8: Challenges of the Farmers in the Pineapple Cultivation

Item	Mean	Std. Deviation
Poor road network	4.8357	.57038
Inadequate markets for pineapple	4.6071	.74618
Farmers lack access to credit facilities	4.6571	.67612
Inadequate gov't support in the form of farm inputs to farmers.	4.4929	.75385
Inadequate Agric extension officers to offer help	4.2357	.97162
Poor soil quality	3.1500	1.51693
Post-harvest losses	4.0643	1.20676
Difficulty in accessing land	3.2214	1.36275
Other diseases	3.7643	.95669

Source: Field Data, Aidoo (2020)

A close observation of the findings in Table 8 shows that the respondents strongly agreed that the poor road network at Nanabin is a challenge to farmers who cultivate pineapple (*M*=4.84; *SD* =.57) and that there were no adequate

markets for pineapples (*M*=4.61; *SD*=.75). Again, the respondents strongly agreed that farmers in Nanabin lacked access to credit facilities (*M*= 4.66; *SD*=.68) and government support (*M*=4.49; *SD*=.75). Likewise, the respondents strongly agreed that there were inadequate Agric extension officers to offer help on pineapple cultivation (*M*=4.24; *SD*=.972). Further, it was shown that the majority of the respondents strongly submitted that they were usually faced with post-harvest losses (*M*=4.06; *SD*=1.21). Lastly, the respondents agreed that they contract other diseases in pineapple cultivation (*M*=3.76; *SD*=.96).

The respondents were asked to indicate, among the numerous challenges, which one they considered as most difficult (Table 9). It was found that 60(42.9%) of the respondents considered post-harvest losses, followed by poor road network (39.3), as most challenging factor in the cultivation of pineapple in the community. The findings of the study affirm that of Danielou and Ravry (2005) who reported that, the major constraints facing smallholder pineapple producers in Ghana to be lack of good roads, storage facilities, shipping facilities etc.

Table 9: The most difficult challenge

Item	Frequency (N)	Percent (%)
Post-harvest losses	60	42.9
Poor road network	55	39.3
Other Diseases	10	7.1
Difficulty in accessing land	6	4.3
Inadequate markets for pineapples	5	3.6
Lack of credit facilities	4	2.9
Totals	**140**	**100**

Source: Field Data, Aidoo (2020)

From table 9 it was evident that poor roads network in the Nanabin community was one of the major challenges among the numerous challenges. Plates7 and 8 show the deplorable nature of roads that connect the community to the main road and a Feeder Road linking the individual farm site in the Nanabin community.

Plate 7: The township road of Nanabin that link the Accra to Cape Coast highway.

Source: Author's fieldwork, 2020

Plate 8: A Feeder Road linking the various individual farm sites

Source: Author's fieldwork, 2020.

In the focus group discussions and key informant interviews, participants were asked to disclose some of the challenge's farmers encountered in the pineapple cultivation. The following excerpts are illustrative:

> *'The major challenge facing smallholder farmers had been post-harvest losses. They attributed this to the poor road network in the district and the study community as well as limited access to ready market for the harvested pineapple.'* (A female participant in the focus group, June, 2020)
>
> *'Pineapple farmers in the Nanabin community incur huge post-harvest losses due to lack of ready market for pineapple. In this case farmers have to transport the fresh pineapple fruit to the cities where they can get people to buy. This normally leaves them with huge transportation cost.'* (Assembly man, June, 2020).

'*Poor road networks count first among the numerous challenges that confront them in their pineapple business. This he said had resulted in huge losses on farmers during harvest due to the inaccessible nature of the roads by pineapple buyers.* (A Male participant in the focus group, June, 2020)

'*Inadequate government support in terms of farm inputs and extension services has been a major challenge facing farmers in the Nanabin community*'. (District Crop Officer, June, 2020).

These findings support those of Ivan et al (2011) who pointed out that most of the harvested pineapples get wasted due to production inefficiencies, post-harvest losses, low level of technology to facilitate processing of quality pineapple products and inefficient marketing system. In addition, the smallholder pineapple farmers are confronted with lack of proper market outlets due to lack of transport which deprived these resource poor farmers of formal market access and increases marketing cost for smallholder farmers in Sub-Saharan Africa (Bolwig et al., 2009)

From the study, the major challenges of the farmers included post-harvest losses, poor road network and incidences of pests and diseases. Shock in the (SLF, Fig1), denote a more sudden pressure on livelihood of the farmers. From the findings, most of the harvested pineapples got wasted due to inaccessible road network, lack of storage facility and inefficient marketing system within the district and the study community as well. These challenges present vulnerability to the smallholder farmer in the study community by reducing their income from farming and increasing

their poverty level. An economic downturn in price of pineapple can take place over years and can lead to unemployment for pineapple farmers. This will put an undue stress and long-term economic pressure on the farmer and affect their livelihood in the long run. The vulnerability associated with pineapple cultivation could have adverse impact on a wide range of capitals, including financial, social, and human, compelling the smallholder farmers to emigrate or engage in other economic activity to sustain their livelihood.

Strategies for Enhancing the Benefit from Pineapple Cultivation

The final objective of the study was to explore the strategies for enhancing the benefits of pineapple cultivation in the community. Again, the responses to the items were also measured with a five-point numerical scale such that one (1) represents the least agreement to the issues while five (5) represents the strongest agreement to the issues. The main variables were evaluated in terms of descriptive statistics such as mean and standard deviation. The results are presented in Table 10. The mid-point for the scale of agreement or disagreement with a statement was 3.00. Thus, any mean score below 3.00 indicated disagreements with a statement while any score equal to or above 3.00 indicated an agreement. As presented in Table 10, respondents proclaimed that improved road network is one of the strategies that can harness the full benefit from pineapple cultivation because it eases the difficulties in transporting farm produce (Mean = 4.8857; Std. Dev. = .54109). Further, the respondents asserted that improved market access is one of the strategic means of realizing the full benefit associated with pineapple cultivation (Mean = 4.6786; STD Dev = .51269). Also, the respondents established that subsidized input from the

government (Mean = 4.6643; STD Dev = .51747), improved extension services (Mean = 4.3857; STD Dev = .78278), and subsidized fertilizers were strategic means for improving pineapple cultivation (Mean = 4.4714; STD Dev=.67262). Lastly, access to credit for pineapple cultivation was considered among the surveyed respondent as strategic means and beneficial to pineapple cultivators (Mean = 4.3429; STD Dev =.73721).

These findings echo the claims by Korboe (2010) who revealed, among other strategies, the provision of soft loans, expert assistance in the selection of the right variety of input or planting materials as way to mitigate the challenges smallholder farmers face in pineapple cultivation and as well as enhancing the needed benefits from pineapple cultivation.

Table 10: Strategies for Enhancing the Benefits from Pineapple Cultivation

Item	Mean	Std. Deviation
Improved road network	4.8857	.54109
Improved access to market	4.6786	.51269
Subsidized input from government	4.6643	.51747
Improved extension service	4.3857	.78278
Subsidized fertilizers	4.4714	. 67262
Provision of processing plant	4.3786	.76307
Improved access to land	4.3500	1.0173
Access to credit	4.3429	.73721

Source: Field Data, Aidoo (2020)

On the same objective, respondents were asked to indicate the most important strategy to their households and the reason for such choice. In this regards, majority of the respondents 60(42.9%) that agreed improving the road network was the most important strategy for their household. This was followed by access to credit (19.3%), subsidized input from government (12.9%) and subsidized fertilizer (12.9%).

Table 11: Most important strategy

Item	Frequency (N)	Percent (%)
Improved road network	60	42.9
Access to credit	27	19.3
Subsidized inputs from government	18	12.9
Subsidized fertilizers	18	12.9
Improved extension services	9	6.4
Provision of a processing plant	4	2.9
Improved access to market	3	2.1
Improved access to land	1	0.7
Totals	**140**	**100**

Source: Field Data, Aidoo (2020)

In line with the last objective on the strategies that could be deployed to alleviate the challenges farmers face in the Nanabin community, participants in the focus group discussions and the key interviews were asked to indicate what strategies should be adopted by the community leaders, district assembly and the farmers to enhance the benefits from pineapple cultivation.

The following are some of the responses:

'Access to credit by farmers could help them expand their farms and increase their yield.' (Female participants in focus group, June, 2020).

'*Improving the road network leading to Nanabin community could ease the difficulties in transporting harvested pineapples to the targeted market as early as possible and as well encourage buyers to come and buy pineapples*' (A male participants in the focus group, June, 2020)

A processing plant is seen as one of the strategies to enhance the benefits of pineapple cultivation as shown in table 11. As part of the strategies to realize the benefits, a processing plant has been built in the Nanabin community as shown in plates 9, 10 and 11.

Plate 9: Inside of the Ekumfi juice processing factory at Nanabin

Source: Author's fieldwork, 2020

These findings confirm the existing literature, as Gatune et al., (2013), Kleemann and Abdulai, (2012) and Kuwornu et al. (2009) assert that the degree of farmers' risk aversion depends on their socioeconomic characteristics as well as technical and institutional support systems like infrastructure, credit,

and market information to make a decision if risk is to be reduced. The capital assets in the conceptual frame work contribute greatly in overcoming poverty and improve the individual wellbeing. Having access to these Capitals serves as a production process that gives the farmer the power to overcome poverty and bring about change in their wellbeing.

However, the smallholder farmers may be vulnerable to certain shocks such as low patronage, limited access to credit and post-harvest losses. But institutions and government policy can act and limit any damage which may occur and perhaps provide assistance. For instance, during low patronage of pineapple produce during bumper harvest, government can buy the excess pineapple and process them into juice or constructs feeder roads to link the farm site for easy transportation. This intervention can relieve the famers from incurring post-harvest losses. The institutions and policies within the frame work help to improve the wellbeing of the farmers. Thus, it is only when vulnerability and institution have been considered then it is possible to develop strategies that enhance livelihood of the pineapple farmer to generate positive livelihood outcomes which include more income, increased well-being, reduced vulnerability (IFAD, 2011)

Observational Checklist

In measuring the wellbeing of the people, a visit was paid to the Nanabin community to observe the available social amenities and ascertain their ownership and the state of the amenities. The ownership of these infrastructures was categorized into state ownership, community ownership and individual ownership whiles the state of the infrastructures were also categorized into good

and deplorable states respectively. Field observations were captured through photographs. Observed data were used to augment quantitative data of study. The table below depicts clearly the ownership and the state of these infrastructures.

Table 12: Observational Checklist on Available Infrastructure

Infrastructure in the community	Ownership of the Infrastructure			State of the Infrastructure	
	(SO)	(CO)	(IO)	(GS)	(DS)
Basic school	✓			✓	
CHIP compound		✓		✓	
Market shed / Community centre		✓			✓
Processing plant	✓			✓	
Chief palace		✓			✓
Library		✓		✓	
Toilet facility		✓			✓

Source: Field Data, Aidoo (2020)

The effects of pineapple cultivation in the Nanabin community were evident in the community's social and infrastructural developments as shown in Table 12. Upon request, the elders of the community permitted me to take pictures of some important infrastructure in the community. The state of these infrastructure was revealed in plates 12 to16.

*Plate 12:*Nanabin Community CHIP Compound

Source: Author's fieldwork, 2020

Plate 13: Nanabin community Library

Source: Author's fieldwork, 2020

Plate 14: Nanabin Market shed

Source: Author's fieldwork, 2020

Plate 15: Nanabin D/A Basic school

Source: Author's fieldwork, 2020

Plate 16: Adontenhen's chief Palace at Nanabin

Source: Author's fieldwork, 2020

Chapter Summary

The chapter discussed the results of the study which begun with the demographic characteristics of the respondents, followed by the main findings of the study. In the results, it came to light that the males were more than the females in the Ekumfi Nanabin community. Majority of the respondents were within their youthful ages. The findings showed that pineapple cultivation impacts positively on the smallholder farmers in Ekumfi Nanabin. However, there were some challenges faced by pineapple farmers in the community, which may reduce the benefits for the farmers.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary, conclusion and recommendations of the study. The summary briefly captures the research problem, objectives and the key findings of the study. The conclusion incorporated the overall findings of the study with respect to the stipulated objectives. Some recommendations based on the conclusions are then made. Lastly, the chapter provides avenues for future research.

Summary of Findings

The study was designed to assess the effects of pineapple cultivation on the rural households in the Ekumfi District of the Central region. The specific objectives that have been addressed in this study are to examine access to land for pineapple cultivation, assess the positive and the negative effects of pineapple cultivation on farming households, assess the challenges of the farmers in the pineapple cultivation and to explore strategies for enhancing the benefits of pineapple cultivation.

- The study revealed that acquisition and access to land for pineapple cultivation in the Ekumfi Nanabin community are largely by inheritance and that chiefs and family heads are the custodians of lands in the community.
- All the respondents 140(100%) submitted that land acquisition for pineapple cultivation had increased in the past ten years. Similarly, all

the respondents anticipated increasing pressure on agricultural land on how land is accessed, managed and farmed in the next ten (10)years

- The study concluded that, pineapple cultivation has both positive and negative effect on the farming households. Pineapple cultivation contributes greatly and provides needed employment, increase income and the ability of the households to cater for their children's education, and other needs of their families. It has provided opportunity for the farmers to overcome poverty and improves their livelihoods.
- Some respondents claimed pineapple cultivation has increased skin rashes and other skin related diseases among small holder farmers in the community.
- Most of the respondents indicated post-harvest losses, poor road network, pests and diseases as numerous challenges facing pineapple cultivators in the community. However, post-harvest losses were seen as major challenge among the numerous challenges that confront the farmers in the community. This is due to inaccessible road network in the district resulting in huge financial losses on farmers.
- On the strategies to harness the benefits, most farmers rated access to credit, subsidized farm input and improved road network to be most important strategy to enhance the benefits from pineapple cultivation.
- Majority of the respondents concluded that improved road network in the community could ease the difficulties in transporting harvested pineapples to the targeted market and encourage buyers to come and buy their fresh pineapples.

Conclusions

Based on the findings of the study, the following conclusions have been drawn:

- On access to land for pineapple cultivation at the Ekumfi Nanabin, the findings concluded that, family heads/ clans are the custodians of the lands in the Nanabin community and that land for pineapple cultivation may either be secured through inheritance, sharecropping purchased, rented, or by leased agreement.

- The study revealed that Pineapple cultivation has really improved the lives of pineapple growers in the Ekumfi Nanabin community. Majority of the respondents indicated that, pineapple cultivation has provided them with gainful employment and an avenue to earn a living. This suggests that pineapple cultivation is a lucrative venture that provides enormous economic benefits. However, some respondents also disclosed that they normally contract skin diseases such as rashes among other diseases as result of engaging in pineapple cultivation.
- On the third objective almost all the respondents strongly agreed with the challenges farmers go through in pineapple cultivation and rated post-harvest losses as the most disrupting challenge. They attributed it to poor nature of their roads and inadequate market for fresh pineapples at Ekumfi Nanabin in the central region of Ghana.
- On the strategies for enhancing the benefits of pineapple farming, respondents rated improved road network as the utmost strategy that could facilitate the realization of the benefits from pineapple farming.

- It is therefore concluded that pineapple cultivation is lucrative venture that has enormous benefits to the rural farmer by providing gainful employment, income to the households and improving the wellbeing of the Nanabin community.

Recommendations

Based on conclusions drawn, the following recommendations are hereby made;

- To promote and facilitate easy access to land for pineapple cultivation in the study area, the Lands Commission, through the Office of Administrator of Stool Lands, should be empowered by some legislative instrument to supervise land transactions. This arrangement will help forestall land disputes and ensure easy access to litigation free land and flexible tenure conditions for pineapple cultivation.

- Again, due to poor nature of road networks in the Ekumfi Districts, the District Assembly in conjunction with Department of Feeder roads should construct more feeder roads to link farming sites and market centers. An improvement in the road networks will reduce the transportation cost and curb post harvests losses which are seen as a major challenge confronting the smallholder farmers in in the community.
- Also, government supports from District Agricultural Office in the form improved pineapple suckers, fertilizers, extension services will help increase annual yield as well as annual income.

Suggestion for Further Study

The study was conducted to assess the effects of Pineapple cultivation on the rural households in the Ekumfi District of Central region. The study specifically targeted only one community in the Ekumfi District in the Central region of Ghana. Therefore, future researchers should consider two or more communities to investigate a phenomenon like this.

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UNIVERSITY OF CAPE COAST

FALCULTY OF SOCIAL SCIENCES

DEPARTMENT OF GEOGRAPHY AND REGIONAL PLANNING

QUESTIONNAIRE FOR FARMERS

Dear Participant,

I am Master Student of University of Cape Coast, undertaking a research project under the theme: ***Effects of Pineapple Cultivation on Rural Households: The Case of Smallholder Farmers in the Ekumfi District of Central Region, Ghana*.** The study is purely for academic purpose hence the honest and sincere response you give will contribute a lot to the research. Participating in this research work is voluntary. All information provided by you will be considered completely confidential. Your name will therefore not appear in any report, publication or presentation resulting from this study. Thank you for your cooperation and support.

APENDEX A

HOUSEHOLD QUESTIONNAIRE

Instruction

Please read carefully and select the response which best expresses your idea about each statement from section A-F by ticking (√) the appropriate box and write where necessary.

Section A: Demographic Data of Respondents

1. Gender: Male [ ] Female [ ]
2. Age: less than 20 yrs [ ] 20-29 yrs [ ] 30-39yrs [ ] 40-49yrs [ ] 50-59yrs [ ]
   60yrs and above [ ]

3. Education Level: Basic [ ] Secondary [ ] Tec / Voc [ ] Tertiary [ ] None [ ]
4. Household annual Income Level (in Ghana cedis): below 500 [ ] 500 -1000 [ ] above 1000 [ ]
5. Household Size: ……..
6. Housing Pattern: Cement block building [ ] Mud-bricks building [ ]
7. Marital status : Single [ ] Married [ ] Divorced [ ] Separated [ ] widowed [ ]
8. Religious affiliation: Christianity [ ] Islam [ ] African Traditional Religion [ ]
   None [ ] other, please specify……
9. Residential status in this community. Migrant [ ] Indigene [ ]
   Others, please specify…….
10. What is your ethnicity? Fanti [ ] Ashanti [ ] Ewe [ ]
    Others, please specify.....

Section B: Access to land for pineapple cultivation

11. Who are the custodians of lands in this community? Chiefs [ ]
    Family heads or clans [ ] Private owners [ ]
    Others please specify.....
12. Do you own agricultural land? Yes [ ] No [ ] if no, Skip to 16
13. If **yes,** how many acres of agricultural land do you own?
    …….acres.
14. How many acres of land have you used for pineapple cultivation?
    Less than 5 acres [ ] 5 -10 acres [ ] More than 10 acres [ ]
15. How did you acquire it? Purchase [ ] Inherited [ ] Family land [ ]
    Sharecropping [ ] Others please specify.....

16. If no to question 12, by what means do you access land for farming?

Lease [ ] Sharecropping [ ] Rented land [ ] Inheritance [ ]

others, please specify.....

17. Do you cultivate pineapples on your land? Yes [ ] No [ ] Others, please specify.....

18. Compared with the past ten years, how will you describe the current acquisition of land for pineapple cultivation? Increased [ ] Decreased [ ] remain same [ ]

19. How will you estimate land acquisition for pineapple cultivation in the community in the next 10 years. Increase [ ] Decrease [ ] remain same [ ]

20. What is your average yield of pineapple per acre? .....

Section C: Positive effects of pineapple cultivation on the rural households

21. Who are those involved in pineapple cultivation in the community?

Indigenes [ ] Investors who are not from the community [ ] Migrants [ ]

others please specify……..

22. Does pineapple cultivation provide gainful employment? Yes [ ] No [ ]

23. How many years have you been cultivating pineapple? Less than 5years [ ] 5-10 years [ ] More than 10 years [ ]

24. How much of the household income come from pineapple cultivation? Small amount of the income [ ] Large amount of the income [ ] All the income [ ]

25. What proportion of your household income do you save per harvest since you entered into Pineapple farming? Small amount of the income [ ] Large amount of the income [ ] All of the income [ ]

26. Has pineapple cultivation improved your wellbeing? Yes [ ] No [ ]

27. If yes, what are some of the benefits? **[Thick all that apply]**

Improved income [ ] increased social status [ ] improved marriage life [ ] improved health status [ ] afford quality education [ ] Received farmers day honour [ ] others, please specify……

28. Have you been able to acquire any personal asset(s), which you could not have acquired prior to becoming a pineapple farmer?
Yes [ ] No [ ]

29. If yes, what are these asset(s) **[Thick all that apply]** Built a house [ ] Bought a car [ ] motor bikes [ ] bicycles [ ] Acquired a piece of land [ ] Had farm equipment[ ] Others, please specify……

30. Have you been able to acquire new equipments for your pineapple farming?Yes [ ] or No [ ]

31. If yes, what type of equipment? **[Thick all that apply]** Cutlass and Hoes [ ] Knapsack Spray [ ] Tractor [ ] Vehicle [ ] Others, please specify……

32. To what extent do you agree with the following? Have there been any improvements in the following areas of your life since you entered into pineapple farming? (SA= Strongly Agree, A=Agree, N= Neutral, D=Disagree, SD= Strongly Disagree

SN	Improvement in	SA	A	N	D	SD
32.0	Accommodation/Shelter					
32.1	Food security					

32.2	Ability to afford health care services					
32.3	Ability to afford education for my children					
32.4	Ability to afford Clothing					
32.5	Marriage life					
32.6	Social status					
32.7	Family life					
32.8	Economic status					

33. Which of these factors in **32 above** do you consider to be the most important to your household, and why?
……..

Section D: Negative effects of pineapple cultivation on the rural households

34. To what extent do you agree with the following? Have there been any negative effects in the following areas of your life since you entered into pineapple farming? (SA= Strongly Agree, A=Agree, N= Neutral, D=Disagree, SD= Strongly Disagree

SN	Increase in	SA	A	N	D	SD
34.0	Land disputes					
34.1	litigations					
34.2	Divorce					

34.3	Cost of living					
34.4	School dropout					
34.5	Social vices (alcoholism, stealing, robbery etc.)					
34.6	Teenage pregnancies					
34.7	Skin rashes					
34.8	Other diseases					

35. Which of these negative effects in **34 above** do you consider to be most dominant in your household, and why?.....

Section E: Challenges of the farmers in the pineapple cultivation

36. Please indicate the extent to which you agree with the following statements on challenges on pineapple cultivation in the district? SA= Strongly Agree, A=Agree, N= Neutral, D=Disagree, SD= Strongly Disagree

SN	Challenges	(SA)	(A)	(SD)	(D)	(N)
36.0	Poor road network					
36.1	Inadequate markets for pineapples					

36.2	Farmers have no access to credit facilities					
36.3	Inadequate government support in a form of farm inputs to farmers.					
36.4	Inadequate Agric extension officers to offer help					
36.5	Poor soil quality					
36.6	Post- harvest losses					
36.7	Difficulty in accessing land					
36.8	High cost of inputs					
36.9	Incidence of pest and diseases					
36.10	Stealing of fresh pineapples at farms					

37. Which of these challenges in **36 above** do you consider to be the most important to your household, and why?.....

Section F: Strategies to enhance the benefits from pineapple cultivation.

38. To what extent do you agree with the strategies for enhancing the benefits of pineapple cultivation in the districts? SA= Strongly Agree, A= Agree, SD= Strongly Disagree, D= Disagree and N= Neutral

SN	Strategies	SA	A	D	SD	N
38.0	Improved road network					
38.1	Improved access to markets					
38.2	Subsidized inputs from government					
38.3	Improved extension services					
38.4	Subsidized fertilizers					
38.5	Provision of processing plant					
38.6	Improved access to land					
38.7	Access to credit					

39. Which of these strategies in **38 above** do you consider to be the most important to your household, and why?.....

APENDEX B

INTERVIEW GUIDES

Interview Guide for the District Agricultural Directorate Office

Socio-demographic data

1. Sex
2. Age
3. Office rank
4. Educational background

5. How long have you been working with this institution?
6. How long have you been working in your current position?

Interview Questions

Access to Land for Pineapple Cultivation

7. Who are the owners of land in this District?
8. What forms of arrangement do people use to access land for pineapple cultivation (Probe by assessing whether they are on purchase, lease, share cropping, rent or other means)
9. Compared with the past ten years, how will you describe the current acquisition of land for pineapple cultivation?
10. How will you estimate land acquisition for pineapple cultivation in the community in the next 10 years.

Positive effects of Pineapple Cultivation on the Rural Households

11. What positive effects do you think pineapple cultivation has on the livelihood of the people in the community? Probe for specific details

Negative effects of Pineapple Cultivation on the Rural Households

12. What negative effects do you think pineapple cultivation has on the livelihood of the people in the community? Probe for specific details

Challenges of the farmers in the Pineapple Cultivation

13. What are some of the challenges the farmers go through in the pineapple cultivation? Probe for specific details.
14. In your opinion, what is the most challenging problem to the pineapple farmers? **Strategies to enhance the benefits from Pineapple Cultivation**

15. What strategies should be adopted by the community leaders, district and the farmers to enhance the benefits of pineapple cultivation? Probe for specific detail

Interview guide for community leaders

(Chief, Queen mother, Family head and Assembly member)

Socio-demographic data

1.Sex 2. Age

3. How long have you been a chief/queen mother/ family head/ assembly member?

Interview Questions

Access to Land for Pineapple Cultivation

4. What is the process of land acquisition in this community?
5. What has been the history of land acquisition in Nanabin? (Explore the changing nature of the acquisitions, what accounts for the change, if any? The key actors in the acquisitions, the uses this land have been put to)

Positive effects of Pineapple Cultivation on the Rural Households

6. What positive effects do you think pineapple cultivation have on the livelihood of the people in the community? Probe for specific details

Negative effects of Pineapple Cultivation on the Rural Household

7. What negative effects do you think pineapple cultivation have on the livelihood of the people in the community? Probe for specific details

Challenges of the farmers in the Pineapple Cultivation

8. What are some of the challenges the farmers go through in the pineapple cultivation? Probe for specific details.

Strategies to enhance the benefits from Pineapple Cultivation

9. What strategies should be adopted by the community leaders, district and the farmers to enhance the benefits of pineapple cultivation? Probe for specific details.

APENDEX C

COMMUNITY FOCUS GROUP GUIDE

Focus group guide for older male and older female

Socio-demographic data

1. Sex 2. Age range

Interview Questions

Access to Land for Pineapple Cultivation

3. How do people access land for farming activities in this community? (Probe to identify whether it is through lease, share cropping, rented land, gift, inheritance or by trusteeship)
4. Who are those involved in land acquisition for pineapple cultivation in this community? (Probe for specific details

Positive effects of Pineapple Cultivation on the Rural Households

5. What positive effects do you think pineapple cultivation have on the livelihood of the people in the community? Probe for specific details.

Negative effects of Pineapple Cultivation on the Rural Households

6. What negative effects do you think pineapple cultivation have on the livelihood of the people in the community? Probe for specific details.

Challenges of the farmers in the Pineapple Cultivation

7. What are some of the challenges the farmers go through in the pineapple cultivation? Probe for specific details.

Strategies to enhance the benefits from Pineapple Cultivation

8. What strategies should be adopted by the community leaders, district and the farmers to enhance the benefits of pineapple cultivation? Probe for specific details.

APENDEX D

OBSERVATION CHECKLIST

Observe the following infrastructure and indicates their ownership under State Ownership (SO), Community Ownership (CO) and Individual Ownership (IO). Also observe the standard of this infrastructure and indicate their standard under Deplorable State (DS) and Good State (GS).

Infrastructure	State Own (SO)	Community Own (CO)	Individual Own (IO)	Good State (GS)	Deplorable State (DS)
Basic School					
CHIP Compound					
Markets shed/Community Centre					
Processing plant					
Chief palace					
Library					
Toilet facility					

APPENDIX E

INFORMED CONSENT FORM

My name is Michael Aidoo a graduate student in Geography and Economics at University of Cape Coast. I have the pleasure to invite you to participate in a research that assesses effects of pineapple cultivation on rural households the case of Nanabin in the Ekumfi District of Central Region. Your involvement in this study is voluntary. I will ask you questions on personal data such as your age, duration of stay in your position, and to address issues emanating from the objectives of this study. I seek your consent to record and document our conversation which might take about thirty minutes of your time. I will ensure confidentiality by assigning code numbers to your responses which I will link your name to and protect your identity at all times.

I ..... have been fully apprised of this research study and I agree to participate in it.

....

Signature of Participant Date

....

Signature of Investigator Date