

**ROAD TRANSPORT AND AGRICULTURE: A COMPARATIVE STUDY OF THE
IMPLICATIONS OF ROAD ACCESS FOR SUBSISTENCE AGRICULTURE IN THE
NORTHERN GHANA.**



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BY

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**A THESIS SUBMITTED TO THE DEPARTMENT OF GEOGRAPHY IN PARTIAL
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DEDICATION

This thesis is dedicated to members of my family who in one way or the other have contributed towards my academics. I dedicate this work to my parents Mr. Eric Aboagye and Madam Mary Donkor. My uncle Joseph Acheampong and my brothers Mr. Eric Aboagye Junior and Mr. Shadrack Kwapong. Finally I dedicate this work to the unborn great minds of my family.

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ABSTRACT

Subsistence agriculture that evolves around the production of staples like maize, groundnuts, yams remains the paramount livelihood for most people in the northern region of Ghana. A starting point in improving productivity and profitability has been the construction of roads. The dominant literature on the road- agriculture relation argues that, with road access farmers can access farm inputs and the market at lower cost. This will allow farmers produce more for themselves and the market. Some even argue with road access farmers will turn to cultivate cash crops. This line of argument visible in most literatures and government documents present subsistence agriculture as if it is an economic activity geared towards market or economic gains. Thus as government provide roads, the assumption is that subsistence communities with roads (accessible throughout the whole year by motorized transport) will produce more for themselves and the market becoming better offs in terms of agricultural production and marketing than communities without roads (inaccessible or accessible with difficult for at least part of the year).

This study examines the implications of road access for subsistence agriculture by comparing two subsistence communities, one with road and the other without road in the same district with the same market town. This research investigated specific objectives of (a) the influence of road access on subsistence agricultural production and (b) the influence of road on the marketing of subsistence agricultural produce. The structuration theories (Giddens, 1984) provided a frame work to explain how subsistence farmers employ both allocative (rain and road) and authoritative resources (norms and statuses) available to them for their agricultural production and marketing. This study relied on interviews and informal conversations. A total of 60 subsistence farmers were interviewed - 30 from each community. In addition, I had 7 informal conversations with informants who were not farmers.

Findings from this research include the following. Subsistence agriculture hinges on rain, thus subsistence farmers in communities with roads are those who can access farm inputs on time and at lower cost taking advantage of the rains to promote productivity. There is the general need for marketing subsistence produce because of modernization but subsistence agriculture marketing is first and foremost about status, role, honour and food security. It is therefore the conclusion of the study that, with road access farmers can promote agricultural production but the market ideals of government does not necessary work with subsistence farmers in the northern Ghana.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

Ghana, like most of Africa, continues to exist at the subsistence level. Subsistence agriculture is typically on small holdings and is the source of livelihood for many people in the country. About 90% of all farm holdings in Ghana are less than two hectares in size (Addo, 1979, Wiggins, 2000, Dorward et al., 2004, Statistic, Research and Information Directorate [SRID], 2011). Improving the income status of subsistence farmers in Ghana who are mostly rural dwellers no doubt remain the central focus of most governments in the country (Johnson, 1973, Compact One, 2004). To achieve the income objective in the country, government after government and their development partners have focused on the construction of roads in rural subsistence communities where majority of its dwellers are subsistence farmers (Hoyle 1973, Yaro, 2013). The explanation or assertion is that, with road access subsistence farmers can access the needed farm inputs like fertilizers to promote or enhance productivity. Secondly road access will open urban markets to subsistence farmers to promote profitability of subsistence agriculture (Compact One, 2004, Umoren et al., 2009). In nutshell Carapetis et al., (1984) assert that, the objective of road construction in Africa is primarily to increase agricultural productivity and improve the welfare or wellbeing of rural farmers. For this reason subsistence communities with roads are thought of as better off in terms of agricultural production and marketing than communities without roads (Rodrigue et al., 2009).

Generally speaking the above statements have not been the assertion of only governments and researchers but also citizens especially subsistence farmers. A study by Porter (2002) revealed that, roads remain one of the top priorities of rural dwellers in off road communities in Ghana. Thus to some researchers roads must be at the center of agricultural development in Ghana (Zimbabwe Forum for Rural Transport Development [ZTRTU], 2005). To other researchers roads are the life line for agricultural development (Olubomehin, 2012). Some researchers also see roads as a bridge while others see roads as a catalyst for subsistence agricultural growth (Addo, 2006, Rodrigue et al., 2009, Chakwizira et al., 2010).

Visible and common to most of these researches is that, all economic activities must be supported by high levels of mobility and accessibility because reduced mobility and accessibility impede growth while greater mobility and accessibility is said to be a catalyst for growth (Hoyle, 1973, Addo, 1979, 2006 Rodrigue et al., 2009). Road access has therefore been adopted as a tool for measuring development and poverty reduction in Ghana and on the Africa continent (Mitiku, 2009, Rodrigue et al., 2009). The idea is that places with roads are better off than places without roads.

If there are places in Ghana where poor or low road access is used to explain low agricultural productivity and poverty then those places will be the rural subsistence communities of the northern Ghana (*See* Addo, 2006, Gariba, 2011, Songsore, 2011). Against this the plight of subsistence agriculture in the region has often been summed up in low or poor road access (*See* Carapetis et al, 1984, Wiggins, 2000, Porter, 2002, Africa Review Report on Transport, 2009, Mitiku, 2009, Chakwizirira, 2010). A starting point in dealing with the plight of subsistence agriculture in the region has been the provision of roads to reduce transport cost and isolation of subsistence communities (Barrios, 2007).

The line of argument visible in most of these literatures and government documents have estimated or viewed the importance of roads in economic terms neglecting the social organization and mechanisms that generally characterize subsistence agricultural production and marketing in different regions. Thus once roads are been constructed in the region the expectation is that agricultural production and profit will increase (Compact One, 2004). But the northern Ghana present a particular case in point when it comes to understanding the relation between roads and subsistence agriculture. In this part of the nation export or cash crops are virtually none existing and subsistence production evolves primarily around the production of staple tubers and cereals which are the least to perish compare to other crops like tomatoes (Hunter, 1967, Yiridoe et al., 2006, ODI, 2005; World Bank, 2011; Yaro, 2013). None the less government after government has resorted to the provision of roads in the region with the view of increasing subsistence agricultural productivity and marketing. Apart from the fact that cash crop cultivation is none existing in the region, the generally rule of subsistence agriculture entails production for household consumption (Gregory et al., 2009).

Subsistence farmers or agriculture is characterized by three major things. The first distinct character of subsistence farmers is that, they consume majority of their produce. The second deals with the quantity of produce for marketing. Finally the motivation of farmers to produce output is the household or the family (Miracle, 1968). By implication the subsistence farmer will produce with or without roads because it is their way of life and their sustenance (Gregory et al., 2009, Lynn, 1973; Yaro, 2013). Governments, researchers and subsistence farmers are aware of this phenomenon in the north but the nation's attempt to increase subsistence agriculture productivity and profitability have been tie predominantly to providing roads to subsistence communities following the general perception that roads are needed to promote subsistence agriculture activities in the north (Gariba, 2011, Compact One, 2004).

Furthermore, Subsistence agriculture is the type of agriculture where a group (household, family, and village) secures food sufficiency for its own reproduction over time. Although subsistence agriculture involves the sales of surplus, it is often seen as a form of cultural adaptation because it involves the sharing of foods and other resources for rituals, ceremonials or social reciprocity (Gregory et al., 2009). This means that while governments and her development partners construct roads for economic gains, the subsistence farmer also plan production for social gains. The question that emergences is that, roads are typical economic activities provided out of economic reasons and linked to economic activities (Addo, 2006, Rodrigue et al, 2009). None the less subsistence agriculture is a social or customary activity that will continue with or without roads (Lynn, 1973; Yaro, 2013). And so what are the implications of an economic venture (roads) on a system that is not motivated by economic gains or reasons (subsistence agriculture)? Against this background I study two rural subsistence communities, the one with road and the other without road in the northern Ghana. The community with road I define as a community which have road primarily tarred (bituminous) which is accessible throughout the whole year by motorized transport (cars, trucks and vehicles). On the other hand the community without road is defined as community with road primarily untarred which for at least part of the year is inaccessible or accessible with difficulty by motorized transport (Porter, 2002: 287).

1.2 Statement of the Problem

The problem of the implications of road access for subsistence agriculture occurred to me when I first visited northern Ghana in 2010. I saw first class roads that were virtually not used. I hardly saw vehicles on the roads. It took the intervention of a friend one night after a programme to get me a taxi driver to take me home otherwise I would have slept in town or walk to my hostel. I asked myself what at all, is the implications of such high quality roads for this people. The study focus on subsistence agriculture because it is the major source of livelihood in the region. Subsistence agriculture as a livelihood in northern Ghana is much more different compare to subsistence agriculture as a livelihood in most part of southern Ghana. In the south of Ghana, it common to see subsistence farmers also growing cash or export crops like cocoa, mango or pineapple. In the north it is a different scenario, subsistence farmers primarily cultivate staples like maize and groundnut for family consumption (Savelugu/Nanton District Assembly [SNDA], 2011). This division of subsistence agriculture in the south and north of Ghana has been poorly addressed by both governments and researchers. Thus subsistence farmers across the nation are categorized as one and the same people who need roads to access farm inputs and markets for higher productivity and profits. While this would be the case for subsistence farmers and communities in the south because of the cash crops and vegetables which are perishable and needs to be transported one cannot say the same for subsistence communities in the north because they cultivate what they eat and these staples are the least to perish (Ibid.).

But the priority of the Ghanaian government in it transport policy is the expansion of rural roads in the north in an attempt to bring modern transport within the reach of high proportion of the rural population engaged in subsistence agriculture (Hoyle, 1973, Compact One, 2004). For this reason, in recent years there has been massive construction of roads in the northern Ghana geared towards raising the productivity and profitability of subsistence agriculture. Examples of such projects in recent times include the Fufulso- Sawla road covering three districts and 27 rural communities (Ministry of Roads and Highways, 2010). Others include the roads constructed by the Millennium Development Authority (MiDA) which also cover two districts and over 10 rural subsistence communities in the northern region (Compact One, 2004).

The community with road in this project is a beneficiary of the recent roads constructed under MiDA in the northern part of Ghana. MiDA's objective for the road construction is the promotion and profitability of agriculture in the districts following the principal objective of most rural road construction in Ghana (Ibid.).

Johnson (1973) indicated that, an attempt to increase agriculture productivity is to a considerable degree attempts to give farmers what it is believed they want or need. But the case of roads have always been different even though it may fall under efforts by governments to give rural farmers what it is believes they want or need. None the less rural citizenry applauds governments for roads because they and the government assume roads assist subsistence agriculture productivity (Hoyle, 1973, Compact One, 2004). Providing roads with the assumption that it will promote productivity means government always forgo the warning that, subsistence agriculture in Ghana is a complex sector and present the most difficult development problems thus to increase productivity we must understand the prevailing pattern of decision making by farmers (Miracle, 1968). These social aspect of subsistence agricultural production and marketing is often ignore hence once a subsistence community is provided with road the expected results is that productivity will increase and income levels will also increase in the northern Ghana.

The literature on road and subsistence agriculture is huge but most of them have focus on the economics of transport, agriculture production and marketing. Much comparative study have also been done in this field but most at times it is at the national level comparing subsistence agriculture in one state to the other also neglecting the micro conditions prevailing at the community levels. In the latter the focus has also been economic (*See* Fan et al., 2009, Carapetis et al., 1984, Mitiku, 2009). Few like Porter (2002) have done comparative research on transport and agriculture at the micro levels comparing communities with road to communities without road but once again much attention was given to the economics of transport, agriculture production and marketing. This study is important in that, it considers the micro level social conditions that governs subsistence agriculture in the northern Ghana.

1.3 Research Objective

The overall or general object is to seek an understanding of how road access impacts or influence subsistence agriculture by comparing two subsistence communities the one with road and the other without road in the northern Ghana.

1.4 Research Questions

- How does road access influence subsistence agricultural production?
- How does road access influence the marketing of subsistence agricultural produce?

1.5 Organization of Chapters

The study is divided into seven chapters. Chapter One includes the introduction, the problem statements, research objective and questions and the organization of chapters. Chapter Two deals with the theories that were employed to achieve or solve the research problem. Chapter Three covers the methods employed to collect and analyze data as well as research ethics in the field and issues of research validity. Chapter Four gives a description of the study context and reason that underpins its selection. Chapter Five, and Six comprises the analytical chapters of the thesis. Chapter Five highlights the influence of road access on subsistence agricultural production addressing research question one. Chapter Six deals with the influence of road access on the marketing of subsistence agricultural produce thus answering research question two. Chapter Seven is the final chapter of this work. It comprises the discussion of findings, summary of the research findings, recommendation and conclusion of the study.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 Introduction

Theories are accepted propositions and statements used in explanation or interpretation of observed regularities or patterns (Gregory et al., 2009, Bryman, 2012). In my search for a theory or theories that can inform my research problem two debates came to mind. First is the debate on transport and development. Concerning this debate one school of thought known as the positive school argues for transport as the key to development (Owen 1964; Addo, 2006). The permissive school asks us to look at the type of economy involved and the level of development of a place before providing roads. This research is not an inquiring into why one subsistence community has roads and the other does not, neither is it about the level of development of a particular subsistence community. It is therefore in the spectrum of the positive school (every community or economic activity needs roads to develop) that I examine the road- subsistence agriculture relation in the northern Ghana. I will also highlight the concepts of complementarity, intervening opportunity and transferability which underpin human spatial interaction (Abler et al., 1971).

The second debate is the debate on structure and agency, which has prevailed in the social sciences and in human geography for the past two decades (Gregson, 2005). There is a general disagreement in social theory about which is the most important in understanding or explaining social actions. Thus the debate on them (structure/agency) have most often posed them as either or alternatives. For that matter some social scientists focus on structures (structuralism) while others focus on human agency as the most important determinant of social action. Finally there are those social scientists who entwine structure/agency (structuration) running them as equal determinants of social action (Gregson, 2005). In this research I employed the structuration theory which entwines structure/agency to explain the relation between roads and subsistence agriculture.

This is because structuralism as a theory for explaining social or human action places little emphasis on the human agent (Giddens and Turner, 1987). The theory focuses on the enduring

and underlying structures inscribed in the cultural practices of human (Gregory et al., 2009: 725). Structuralism focus on structures because of its claim that social structures have no agents and cannot be understood by studying individuals (Peet, 1998). In structuralism structures are constrains and the human agent is primarily a product of the social structures (Giddens, 1984, Gregson, 2005). Employing structuralism means that subsistence farmers are not important in explaining the relation between subsistence agricultural and roads in northern Ghana. The structuration theory on the other hand provides a critique against structuralism and provides a framework for explaining the relation between roads and subsistence agriculture where both subsistence farmers and the structures they are involved are entwined to explain the relation between subsistence agriculture and roads in the northern Ghana.

2.2 Structuration Theory

In the application of this theory I was motivated by a statement that “agency remains the hallmark of all livelihoods, but this cannot be pushed outside the parameters of control (structures) to the agent” (Yaro, 2013: 84). Postulated by Anthony Giddens (1984), the structuration theory neither emphasizes the primacy of the structure over the agent nor the agent over the structure. The theory emphasizes the knowledgeable of individual agents in the reproduction of social practices (Dyck and Kearns, 2006: 87). In the words of Gregory et al., (2009: 725) the structuration theory is a bridge theory that explains the intersections between agency and the structures they are involved and ask social researchers to focus on social practice. This is because routinized social practices with it structural properties allow the binding of time and space, it is therefore possible for similar social practices to exist across time and space (Giddens, 1984: 16). Thus making it possible to employ the theory for comparative study.

Furthermore Burton and Wilson (2006: 96) sees the structuration theory as a theory that bridges the division between the macro and the micro and the actor and the structure. Structures are rules and resources which are both enabling and constraining. Agent is considered as knowledgeable and capable actors who perpetrate intentional social actions (Gregson, 2005:22). The knowledgeable of agents was noticed by Jack (2005) in the study of UK post war agricultural accounting principles. She illustrated how UK farmers, government and private consultant

services have all contributed to the persistence of the agricultural accounting principles. Knowledgeable and purposive agents taught and practiced the agricultural accounting principle which have resulted in its persistence in the UK.

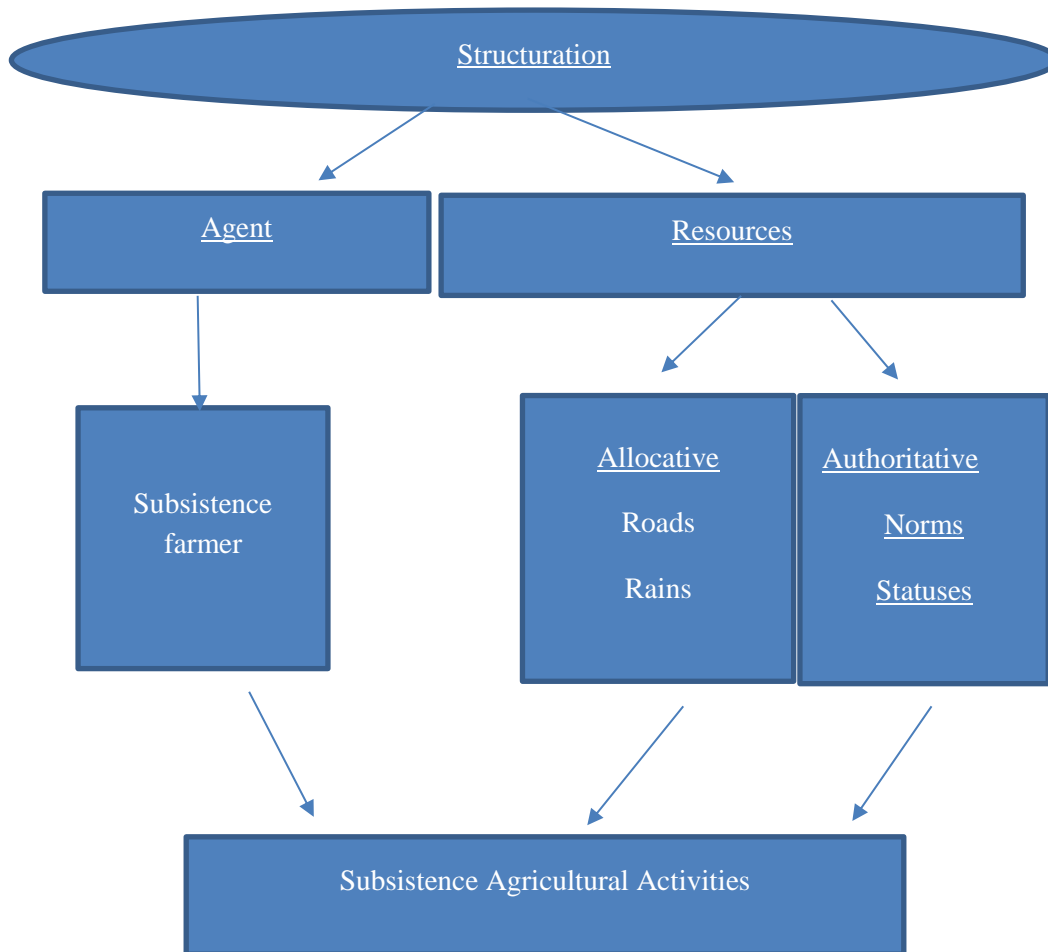
Giddens indicated that, the agents make use of the resources in a particular society for social actions but the society also constrains their actions by binding them to the resources provided (Giddens, 1984; Yaro, 2013: 84). This is evident in Ridgeway and Jacques study of the conflict between Zapatista peasant farmers and the Mexican government over their right to agricultural land. Ridgeway and Jacques noticed that violence is carried out by purposive and knowledgeable agents but the state or societal rules act as a constraint on people to act violently. But the constitution of the same state or society has laws and rules that give farmers the right to land. These rules farmers are aware of thus the right to violence demonstration when their right is denied them (Ridgeway and Jacques, 2002).

Giddens identified two types of resources. They are authoritative and allocative resources. Authoritative resources are capabilities that generate command over the human agent (Cohen, 1989; Peet, 1998: 156). While allocative resources are derived from aspects of the material world (Giddens, 1984). At the core of the structuration theory is the duality of structures. The duality of structure is a recursive process in which structure is both a medium and an outcome of reproduced social practices (Giddens, 1981; Dyck and Kearns, 2005: 87). Helander (1999) noticed the recursive nature of structures in subsistence activities in his study of Sami ptarmigan hunting. Helander illustrated that through the routinized international hunting activities of Sami's group of people, they are able to conceptualized places and spaces in their localities. Through their hunting activities they are able to produce and reproduce their concept of space over time. Ptarmigan hunters talk and teach their children about their established hunting and space land system. Thus the law governing hunting becomes a medium and an outcome for hunting reproduced through hunting, talking and teaching.

The structuration theory provides a framework for understanding that subsistence farmers make use of both authoritative and allocative resources in their subsistence communities for subsistence agricultural activities but the subsistence communities constrains farmers agricultural

activities by binding subsistence farmers to the resources provided. In the northern Ghana the agency (subsistence farming or farmer) reveals a great deal about the relation between roads and subsistence agriculture. Subsistence farmers are knowledgeable and take all agricultural decisions but not out of the resources provided by their communities.

Figure 1: A framework of the Structuration theory.



Source: Adapted from Giddens (1984). Underlined words or concepts are from the original theory.

Allocative resources come from the external world and farmers have little or no control over them yet it determines their production success. The rain and the roads comprises the two allocative resources in this case. The rain is the most important allocative resource for subsistence agricultural production. Subsistence agriculture in northern Ghana hinges on the rain

which farmers have no control over. The rain determines when to produce and the output of production. The production output determines how much quantity a farmer have to feed the family and how much quantity a farmer have to sell (Yiridoe, 1973; Yaro, 2013). The rainy season determines the duration of the planting season. Farm decisions are made depending on the coming and duration of the rain. Without the rain subsistence farmers cannot farm. Life evolve around the rain and so farmers wait and anticipate the coming of the rain to start planting (Hunter, 1967). Miscalculation on the part of any farmer concerning the coming and duration of the rain can have disastrous effect on production output in a season.

The roads are modern and are primarily to facilitate subsistence agricultural activities (Compact One, 2004). When the rainy season begins a subsistence farmer then needs roads to access modern farm inputs like fertilizers and after harvest a farmer needs road to access the market or traders (Mitiku, 2009). The rain as a structure is recursive in that it is most important resource for subsistence production because it determines production output. It is also an outcome of production because of subsistence farmers' continual dependence on it (Dyck and Kearns, 2005).

Social statuses, norms or rules of subsistence agriculture are authoritative resources in northern subsistence communities. According to Linton (1936: 113) a status is the position an individual occupy in relation to the total society. Statuses could be ascribed or achieved. Ascribed statuses are assigned to individuals without reference to their innate differences or abilities. People are normal born into ascribed statuses or socialized into such statuses. All statuses come with it duties, obligation and rights which need to be perform by the occupants of that position or status. This is their role (Linton, 1936). The subsistence farmer status limit or tie them to the norms or rules of subsistence communities and production. The norms or rules of subsistence agricultural production is producing to feed the family. This rule means that subsistence farmers must produce what they eat which is primarily determined by the community. What they produce is not influence or determined by market demands (Gregory et al., 2009).

This is the primarily duty or role of a subsistence farmer. Here the agency of subsistence farmers or farming is expressed through the farming culture (Burton and Wilson, 2006). Subsistence agriculture is a social or customary activity (Gregory et al, 2009, Lynn 1973; Yaro, 2013) and so

one need the norms of community to understand such a social activity. Honour is a person's worth as seen by the person and also the way in which community regard such a person. A person invests the honour in the community and the community recognizes it thus the honour of the community is synonymous with the individual honours' (Pitt-Rivers, 1965; Aase, 2013: 3). In northern subsistence communities the worth of a man is seen in his ability to feed or help feed the family. Thus the community's honour is also in its ability to feed itself. The concept of honour in the region means that subsistence farmers produce only staples as determine by the community. Marketing in subsistence agriculture is essentially a means of meeting and satisfying certain needs of people (Bartels, 1976: 1). And secondly as trade which involves transportation and exchange of commodities for money (Gregory, 2010: 764). With the honour of people associated with feeding the family marketing continually remains a secondary function for subsistence farmers in the northern Ghana. The most important status in the communities is the land lord who is the head of the household. The duty of the land lord is to feed the family which is also his honour in the community. This means that the subsistence farmer must produce what the family eats, which is his duty in the community and his honour.

2.2.1 Regionalization

Giddens continues that, the continuity of social life is dependent on interactions with and between others who are co-present in time and in space (Giddens, 1984, Peet, 1998). This is regionalization according to Gregory et al., (2009). The concept of regionalization help explain that, the daily farming practices of subsistence farmers being it production or marketing is sustained through interaction with others like transport service providers, inputs providers, traders and agriculture extension officers and other subsistence farmers. This idea elucidates the importance of subsistence farmers' daily interaction among themselves and with other actors through a means of transportation to shape subsistence agriculture. Effective and efficient interaction between people and place depends very much on the means of transportation. In a nut shell the structuration theory provides a framework for understanding the relation between roads and subsistence agriculture through the study of the agency of subsistence farmers and their interactions with others who are co-present in time and space.

2.3 Concepts of Spatial Interaction

There are three basic concepts of spatial interaction which are necessary in explaining subsistence farmers' spatial interaction with market towns to access needed farm inputs and the market. Spatial interaction is realized movement over space from an origin to a destination resulting from a human action (Heynes and Fotheringham, 1984). The spatial interaction of farmers depends on three concepts complementarity, intervening opportunity and transferability.

2.3.1 Complementarity

Complementarity is generally recognized that, demand and supply relation forms the very first reason or basis for place or people to interact. For two places to interact there must be a demand in one place and a supply at the other. The demand and supply must be specifically complementary (Abler et al, 1971: 194). The dominant literatures on the road and agriculture relation posit that road access will give rural subsistence farmers access to farm inputs and to market which are mostly in urban centers to promote productivity and profitability (See Compact One, 2004). Thus the concept of complementarity explains that subsistence farmers will interact with urban centers only if farmers demand for farm inputs in the subsistence communities is supplied by the market town. Again if there is a supply of agricultural produce in the rural communities there must be a demand or a market for the produce in the market town or urban center. A market town is defined here in terms of its ability or capacity to act as a focal point for trade and services for a hinterland (Powe and Shaw, 2003; 2004; Shorten, 2004; Richardson and Powe, 2004: 363).

2.3.2 Intervening Opportunity

Complementarity between places is meaningless in the face of an intervening opportunity. Intervening opportunity are locations that lie between two complementary places that might act as an alternative destination (Abler et al, 1971: 194). This concept explains that if rural communities will interact with a particular urban or market town then there must not be any

other urban center between the rural community and the urban center that can either perform the supply or demand functions of market or urban center.

2.3.3 Transferability

Transferability of an interaction is measured in real time and money cost. The concept of transferability entails that the benefit of the interaction must exceed the cost of the interaction. If the time and money cost of an interaction is larger than the benefits then the interaction would not take place in respect of a complementary relation and the absence of an intervening opportunity (Abler et al, 1971: 194). The transferability or profitability of interactions is depend to a great extent on accessibility. Accessibility is principally the outcome of transportation activities. Transport activities also hinge on the capacity of transport infrastructure to support the interaction of farmers (Rodrigue et al, 2009). The concepts of regionalization, complementarity and intervening opportunity form the basis of analysis and selection of the study communities.

2.4 Positive School

The positive or the optimistic school of transport thoughts is characterized by very positive and strong statements about transport. Such statements include the popular saying of Lord Lugard (1992) that “the material development of Africa may be summed up in the one word, transport” (Addo, 2006: 2). In like manner Voigt (1967) said “transport is the formative power of economic growth and the differentiating process” (Ibid.). There are many scholarly publications on the road - agricultural relation. Below I discuss or review some of the available literature that illustrate the positive school of transport and development. These literatures focus on the economics of the road-agriculture relation relegating the social aspects of agricultural production on the African continent.

The central idea of these literatures can be summed up in a single phrase, all subsistence communities’ need road access to promote productivity and profitability and subsistence communities with roads are better off than communities without road in terms of agricultural production and profitability. Hine et al., (2001) avers that, if a rural footpath is replaced by a

bituminous road then farmers can enjoy over a hundred times more benefits than a gravel road. Olubemehin (2012) outlined some of the joys of farmers who have roads. Such joy includes the point that roads opened up rural communities for economic activities which leads to increased agriculture production and commercial trading activities. Again roads help in the production and marketing of foodstuffs and livestock and are the sole means of exploitation and evacuation of agriculture produce from the rural areas to the urban market center. He therefore labeled road transportation as the lifeline of rural economies. Ajiboyen and Aflolayan (2009) also highlighted why roads are life lines of agriculture in Africa. They assert that the dispersed nature of Africa rural settlements make roads very important because it is only road transport that has such wide spread network to allow farmers access farm inputs and the market. Furthermore most agricultural produce are heavy, bulky and perishable and their conveyance to the market must be with minimum delay and cost. Thus poor road transport alone account for 25% wastage of the total agricultural food stuffs produce on the continent.

Other optimistic transport researchers' argues that roads influence the kind of crops and farming systems adopted. Wiggins (2000) averred that providing market access through roads influences the type of farming system adopted. Market access can lead to agriculture intensification or extension. The study indicated that, West Africa farmers are eager to take advantages of market access to grow their farms. He indicates how yams produce in northern Cote d'voire reach Abidjan. Another case is how tomatoes produce in rural areas of Brong reach Kumasi in Ghana. He cites a case from the Sourou Valley of South- East Mali where 6k ha of irrigated rice has been cultivated within five years using indigenous techniques and resources as a result of market access through road. He finally argued that, without good roads to market places agriculture development is problematic and farmers at best finds ways to cope or subsist. He sees a clear example in Manya Krobo which used to be a food basket for Ghana but due to poor roads villagers now subsist.

Furthermore, other researchers have also demonstrated how roads influence the prices of agricultural produce and farmers' decision to go to the market or to sell at the farm gate. Among such researchers are Fafchamps and Hill (2005) and Tylor and Philips (1991). Fafchamps and Hill showed how roads influence prices of agriculture produce. They claim roads influence rural

farmers decision to either sell at farm gate (community) or travel to markets. Selling at farm gate implies farmers selling on the farm or the community or rather buyers going to the rural areas to buy from farmers. Their study revealed that selling at farm gate give farmers lesser revenue than selling on the markets but it remains the best option for poor farmers who cannot afford the transaction cost of transportation or who are located miles away from roads. Tylor and Philips continue this line of argument and claim that it is profitable to sell agriculture produce in the markets and so farmers who have the access, can afford and are willing to travel to distance markets get the best price for their produce. In a nut shell when farmers are deciding whether to sell at the farm gate or to travel to market, a farmer must choose between receiving a lower price upfront at the farm gate because of the transaction cost incurred by the traders or receive higher prices at the market but must incur a transaction cost. They made a case for roads as very crucial for agriculture especially in the current atmosphere of wide spread price discrimination against agriculture produce.

Such optimistic statements about roads have not only come from country specific study but also from comparative study at both macro and micro levels. Fan et al., (2009) in an International Food Policy Research Institute (IFPRI) briefing indicated that, the relation between road transport and agriculture growth in Sub Saharan Africa using a number of SSA countries such as Ghana, Uganda, Ethiopia, Tanzania, Gambia, and Nigeria. Fan and his colleagues proved that the only way Africa can achieve the global development goal of halving its poverty rate is through agriculture development. Moving their argument forward they claim past trend of public investment in agriculture and transport infrastructure have been low in Africa than countries in Asia. They advocate for increase investment in agriculture and road infrastructure but they suggested increased investment in road infrastructure than agriculture spending (irrigation, research, extension officers). According to them the only investment that has tremendous influence on agriculture development in Ghana is investment in roads. Fan and his colleagues claim the first point of call for public spending in African must be on rural road infrastructure.

Porter (2002) showed how living in ‘off road’ settlements in Ghana and Nigerian can be disadvantageous to agriculture development and the people themselves. She review such issues as ‘off road’ service provision, ‘off road’ transport deficiency and the cost and the feeling of isolation, invisibility and powerlessness associated with ‘off road’ settlers. In relation to service

or market access Porter claims that access to market in 'off road' settlements is seriously hampered by poor transport. She claims because of poor road conditions especially during the raining season vehicles may delay or might never arrive. The implication are the loss of sales or not selling at all because urban traders arrive early to the market and therefore buy from villagers who have their produce available. This system of marketing in Ghana favours rural farmers who live in 'on road' settlements than 'off- road' farmers. Her study revealed that transport cost for 'off road' dwellers are twice that of 'on road' dwellers making the return on farm gate prices lower for 'off road' dwellers.

Finally in a World Bank working paper which assessed pro-growth and pro poor transport strategy. Mitiku, (2009) illustrated the relation between transport accessibility, growth and poverty reduction. His study reveals that in Africa, Asia and Latin America improvement in rural roads reduces cost of marketing agriculture produce and encourages farmers to produce more goods for the market. He further avers that improvement in transport encourages agriculture mechanization, the use of fertilizers, high yielding varieties and even cash crops. Citing empirical examples he claimed that, the rural roads improvement programmes in Ghana, Guinea and Malawi among others have contributed tremendously to improved rural accessibility and increased agriculture productivity. Binswanger – Mkhize and McCall (2010) making a case for roads averred that deficiency in road infrastructure is the reason agriculture in South Sahara Africa (SSA) is not performing or growing as it should. They commented on the low road density in South Sahara Africa relative to the rest of the developing countries to illustrated agricultural growth in other developing countries. They further claim that transport cost in SSA is one of the highest in the world reaching as higher as 77% of the value of export and that SSA farmers' pay three times the price of fertilizers compare to their counterparts in Brazil, India and Thailand because of poor roads.

In conclusion this chapter have highlighted the structuration theory and how it provide a framework for understanding the road- subsistence agriculture relation in the northern Ghana through the actions or activities of subsistence farmers. The concept of regionalization also showed the important of others in subsistence agriculture. The concepts of complementarity, intervening opportunity and transferability provided a basis for understanding farmers' interaction with their market towns. The literature on the positive school of transport and

development explains the many positive influence of roads on agriculture mainly in terms of economic gains.

CHAPTER THREE

METHODS

3.1 Introduction

It is no exaggeration to say that, the how or method of knowledge production remain the most important component of every research. It entails ways of doing, the practical means through which data was collected and interpreted to solve the research problem (Aitken and Valentine, 2006). In this chapter I discuss the methods I employed to collect and interpret data as well as the research ethics employed during my field work. Finally I highlight the issue of research validity.

To answer the research problem I employed a qualitative research methodology because it allowed the exploration of meanings, emotions, intentions, values and experiences that make up the lifeworld of subsistence farmers in the northern Ghana (Ley, 1974; Seamon, 1979; Clifford et al, 2010). It also allowed an understanding and explanation of the social world from the views of subsistence farmers. Employing qualitative methods gave me an added advantage of a face to face interaction with my informant making the research process none oppressive. As argued by Bryman (2012) such methods allow researchers to see through the eyes of the informants. I used semi-structured interviews as my principal method of data collection however methods such as simple observation and photographs were also employed. Every research method comes with its own benefits and challenges on the field. In the sessions below I describe my experience on the field in relation to my research methodology, the politics of self-representation in the field and plans and decisions employed to make the best out of the field.

3.2 Entering the Field

My field work lasted from May to August the year 2013. Before I left Norway for the field (Ghana) I only had a study region in mind but no specific area of study. This study region as already stated was selected because subsistence agriculture is the dominant livelihood and secondly as a result of my past experience in the region. In Ghana my first point of call was the Ministry of Food and Agriculture (MoFA), Accra to obtain information on agriculture

communities and production in Ghana. At the ministry I was directed to the Statistic, Research and Information Directorate (SRID) of the ministry. At the Directorate I was immediately asked of my introductory letter after introducing myself, my research topic and the information I needed. This was a confidence booster because I got the impression that I could find my study communities from the Directorate. Secondly I got the impression that I will get necessary information fast and easier but unfortunately I was asked to wait for the director to endorse my letter before they could give me any information.

After waiting for some hours, a worker came in and asked me about why I am still there. I told her and she offer to help but stop as soon as I told her I am a student from Norway. She said information going out especially outside the country must be endorsed by a senior officer. After waiting for close to three hours a senior officer came and I was immediately inform by the lady. She took me to the office and introduced me and told him I have left an introductory letter at the reception. I had a very lively conversation with the senior officer about my research. I told him I was still looking for a specific study area(s) in northern region. After the discussion we agreed I would need Facts and Figures on Agriculture in Ghana, Agriculture Production Estimate of all regions and districts in Ghana. Information on district agriculture also contained the type of crops peculiar to each district and their market price. The information in these documents proved resourceful especially in choosing my study district.

In the ordinary sense of events, a visit to the Ministry of Transport should have followed because I was looking for an agriculture district which had one community with recent road (1-3 years old) and another without road. But I called it a day after spending over three hours at the research directorate. It was already afternoon and I probably might have to spend another three hours waiting for a senior officer in the Ministry of Transport. And so I decided to start again the next day. The next day at the ministry of Transport I was directed to the Ministry of Roads and Highways after introducing myself and what I needed. The Ministry of Roads and Highways also directed me to the Highways Authority. The Highways Authority finally directed me to the Departments of Feeder Roads. At the Highways Authority I made a friend in one of the directors who gave me the name of the Chief Engineers at the Department of Feeder Roads. While at Feeder Roads I introduce myself and asked for that particular engineer. I was taken to meet him

in his office. I told him about who directed me there and my research problem. He immediately called another colleague to come to his office for a short discussion with me.

Straightway they told me they knew the answer to my research problem and every one does. They even asked why I chose the north and not the south where I have lived all my life. It was disheartening to know that everybody knew the answer to my research problem. I then asked them to tell me the answers to the research problem. They began to speculate about how roads add value to communities. I continued and asked them if they have ever done a comparative study of similar communities to investigate the implications of road access on subsistence agriculture. Then the real lectures began for more than twenty minutes I sat listening to them, my only regret I did not go with a recorder. My plan for the day was to obtain the names of subsistence communities with roads in the northern region. It was from this discussion I learnt that for me to do a good comparative study the communities must of necessity be in the same district with the same market town. From there, the whole research began to look impracticable. I had a lot to do than I thought. Finally they told me it is unfortunate they cannot help me with specific communities with recent roads in the north. I need to travel to the north to find out from the regional office of Feeder Roads Department in Tamale. Now things have become more clear yet I was still confused as to how I could find the communities within the same district and with the same market town. Do such communities exist at all? After the meeting I went home to go over the discussion notes I took for the day and the information I have taken the day before from SRID.

3.2.1 Entering the Study Region (Tamale).

The pressure to find a study location kept me on my toes so within the next two days I was on my way to Tamale (motor city) the capital town of the northern region. I call Tamale a motor city because motor cycles seem to be the dominant means of road transportation. I had friends in Tamale so accommodation was not a problem. I informed one of them about my coming prior to my departure and he had already prepared a translator/assistant for me whose name is Alhassan Zechariah (Zack). Tamale is dominated by Dagombas and the spoken language is Dagbani. Dagbani was the medium through which I conducted most of the interviews because as argued by Spradley, (1979; Pratton, 1990; Kapborg and Bertero, 2001) the language of a people is the

medium through which they organizes their world. When I met Zack I told him I am University of Ghana student interested in doing my research in the north. The practice of deceptive representation on the field is nothing new. It is the duty of every researcher to assess situations and know which status will allow him or her access the best reception and information (Shaffir, 1991; Mullings, 1999).

Thus for the first week on the field I chose to be a University of Ghana or Bergen student depending on who I was dealing with and the kind of information I needed. As argued by England (2006) a researcher's status may act as a push and a pull factor enabling and inhibiting research insights. Choosing a status that enable research insights was necessary in my field work. A student from the University of Ghana was good in that it enable symmetrical relation from the beginning. Had I told him I am student from Europe, straight away it would have been a "boss" and a "worker" relation knowing how Ghanaians respect their own people who lived or school outside the country. He would have gone to any extent to pick me up at the central lorry station if he had prior knowledge that I was a student from Europe and not Ghana. Asking me to pick a taxi to meet him assured me he thought of me as a Ghanaian who can find his way around and who does not need any special treatment. In the study communities I used my position as a student from Bergen Norway because it gave easy access and people became friendly because I am doing my research in my country. In such instances my position as a student researcher meant that my primary duty is to ask the questions and I get the answers.

The journey from Accra to Tamale by road by buss was about thirteen (13) hours. The journey started around 4pm and I got to Tamale about 5am. The journey was tiresome and on my arrival as agreed with my friend Zack was supposed to pick me up but he could not because he did not have a motor cycle. His brother would not allow him use his. Apparently my friend had to leave for Accra the morning I arrived for an official assignment. My friend works with the Food and Drugs Board. After Zack informed me about his inability to pick me up at the central lorry station through a mobile phone conversation he asked me to pick a taxi and meet him at Choggu junction. From the junction he took me to my accommodation (my friend's house). He introduced me to the land lord and other tenants of the house. Exhausted from the journey but burden by study communities, I discussed my reason in the north with Zack and asked if he had the time to be my translator/assistant throughout the field work.

Zack (my translator/interpreter) is a high school graduate preparing to enter a tertiary institution (Northern School of Hygiene). He was working as a handy man to raise fund for his education so it was good I got his commitment in the beginning. Because he could just walk off at the call of a new job. After his commitment I asked him where we can get a motor to start the work. He replies “it is impossible for someone to give you his or her motor for the period you intend to stay here. It would have been possible if you were here for two or three days but for two months and over it is not possible in Tamale. Our motors are eventually our lives but if you can convince one of my cousins who is a motor repairer then you can have a motor for as long as you stay because as a repairer he has many motors at his disposal”. As a Ghanaian I knew renting a taxi was too expensive considering my past experience in the region. Again I was about touring the districts and communities in the region to select my study communities even before I can begin my interviews. So I agreed to his suggestion to talk to the cousin motor repairer. He took me to the cousin and he was preparing to go to school. Apparently this cousin was a not just a motor repairer but also a high school student of geography. And so out of respect for a senior geographer as he came to call me he agreed to offer his personal motor cycle for as long as I intended to stay there.

He told me the terms and conditions of use. These include allowing Zack his cousin to drive him to schools in the morning when he runs out of transport options. The motor cycle needed new tyres, lights and tubes and other general maintenance work. If I could afford to do that, then he would release it to me. I will also pay for it maintenance as long as it remain with me even if he is the one repairing it in cases of damage. We agreed on a sum of 150.00 Ghana Cedis for initial repair works and as part payment for the use of the motor. And so the journey to look for the study communities began shortly after Zack drove his cousin (motor owner) to school. Zack asked if I would like to rest a while I said no let start now. The anxiety over a study location kept me on my toes so I asked him to take me to the regional office of the Highways Authority. He drove me there I asked of the director but he was out of the office. I had the director’s name from my rapport with the Highways Authority in Accra. The director was not on sit so I decided to get something to eat with Zack. At the restaurant (food joint) Zack received a call from a girl and as two young men things naturally started to unfold. He began to tell me a lot about his life, his belief as Muslim, his education and his intention to continue that year.

He completed high school in 2007 and was still planning to go back to school. I disclosed my identity as a student from Norway and then shifted the discussion to my research problem. At the restaurant I brief him more on the research problem and answered all his questions about the research. He suggested some communities he knew which had recent roads and others without. I then discuss his duties as my driver and especially my translator and his pay. About his pay he said your friend has been very helpful to me ever since he came to live in this neighbourhood but you need to get me some cloves and a bag for my water and food”. We agreed on an amount as his salary. Looking at how passionate he talked about going to school I promised to pay for his interview fee should he be called for an interview by the tertiary institution school he applied for. I also gave him a launch package for the whole period of the research. I then added credit package for his phone. He smiled and for the first time called me by my nick name Captain Braun. From this time things became informal and we call it day because I was tired and needed rest. I told him we will check on the director the next day. We went to get his cloves and bag and I gave him some money for himself and gave him the full money we had agreed on to be given to the cousin to fix the motor. In the evening Zack came around so we shared dinner and talked more about my research problem. He assured me such communities existed and that I will definitely find them. He informed me about a family relative who work with the Highways Authority and I asked me to meet him.

Early morning the next day Zack and I paid a visit to his uncle. I introduce myself as a University of Ghana research student who has been directed to the regional director by one of the Highway Authority Directors in the national office. The uncle told us to come to the office at 9am and when we did he took me to the office of the director to wait for the director in his secretary’s office. I was introduced to the secretary as a University of Ghana student who has been directed from Accra to see the director concerning his thesis. English is the official language of Ghana thus in such offices English tend to be the medium of communication. I did not need a translator in such offices hence Zack preferred to sit outside and wait. When the director reported for the office, the secretary told him about me and I was later asked to go and see him. He asked me of my research problem and my introductory letter, he read it and asked me to go to Feeder Roads. He directed me there and gave me the name of their director. I rode to the Feeder Roads Department in Tamale. I politely approached a man I met in the premise of Feeder Roads. I greeted and I told him I was looking for the director whose name I mentioned. It

happens this man was the director and he was preparing to leave for Accra the next day. I told him I have been directed by the director of Highways Authority. As a mention the name of the Highways Authority Director he did not ask of any letter. He asked me into his office and after a lively discussion about my research he assured me there are two agriculture districts in the region that have new roads constructed through them as a resulted of the Millennium Development Transport Programme.

But unfortunately the lights are out so you have to go through the books in the store house and copy the names of these communities for yourself. I am preparing to travel so cannot promise to send it by mail. I cannot also photocopy it for you because the lights are out. Finally my anxiety over a study area was diminishing. I politely asked him to open the store house so I can copy the names of the district and the communities. The districts were the Savelugu/Nanton and Kumbungu district. Subsistence communities in Savelugu/Nanton district with recent roads included Guno, Sandu, Zoggo (Zawgu), Tampion, Yong and Kpendua. Botanga, Pong, Landokura, Diare and Kpong were subsistence communities in Kumbungu district. Now all was set to start the search. The director gave me his contact number in case of any eventuality on the field. Back at my residence I went through the district agriculture production estimate obtained from Accra. I realized the agriculture potential of the two district were great. At this discovery the anxiety of a study community continued to diminish.

3.2.2 The Tour, Preliminary Interviews, Translator and the Feud

I decided to tour the two districts to enable me choose the best communities for the study. I started my search with Savelugu/Nanton since it was the closest to Tamale where I lived. Savelugu is about 15 – 20 minutes' drive from Tamale by my motor cycle without stops. I was not just looking for a community with road I also needed a community without road which made the search really difficult. Travelling through farm lands to reach communities on motor is very fun yet dangerous and tiresome. I decided to do a preliminary tour in which I will not make any concrete decisions. So on the first day I did a general tour of as many communities as I can in Savelugu/Nanton. The second day I toured Kumbungu/Tolon district. I settled on Savelugu/Nanton. A discussion with the head of research, Millennium Development Authority, Accra after my data collection revealed that it was good I settled on Savelugu/Nanton because that is where most of the new roads were constructed. Furthermore, all communities in

Savelugu/Nanton district to radiate towards Savelugu (market town). On the third day of the tour I went over Savelugu again and finally settled on Moglaa as the community without road and Zawgu as the community with road.

I change Zawgu to Young because Zawgu was twice as far as Moglaa was from Savelugu. I wanted the two communities to at least be within the same distant range 3-7km. The two communities were Dagomba communities and spoke Dagbani. Different languages express different realities thus the major dilemma of Zack (translator) was translating reality from English to Dagbani and vice versa especially in instances where there was none equivalent words either in English or Dagbani (Spradley, 1979; Prutton, 1990; Kapborg and Betero, 2001). I heard him using word like “Motor Chee” “Tractor Chee” as ways of differentiating between the regular motor cycle and the motor king (motor tricycle). “Tractor chee” was used to differentiate the plough from other tractors. Although Zack found language and cultural equivalent words like “tractor chee” his focused was on the central meaning or value of the conversations something I applauded him for. As argued by Spradley (1979; Prutton, 1990; Kapborg and Carina, 2001) translating meaning entails the reconstruction of its value not necessary it cultural inscriptions. This I discovered during preliminary interviews and transcriptions conducted during the tour of the districts to select my study communities.

During the tour mostly in the Savelugu/Nanton district I did preliminary interviews involving five farmers in other communities (Guno, Batayili, Sandu and Nanton). Guno and Sandu were subsistence communities with road and Batayili was a subsistence community without road. The preliminary interviews were primarily to test the strength of my interview questions but it proved to be more than that. It exposes some challenges in using a translator on the field. It was about our (Zack and I) fourth day together and we have discussed my topic over and over again, he has gone through the questions over and over. And so at this time he felt he was in control of the field work. During the preliminary interview I called on farmer who were sitting under a shade resting, after greetings and introductions Zack negotiated a conversation and went straight to ask the first three demographic questions which he had master without asking for the permission of the farmer or telling the farmer what the research was about. All I heard was hope the recorder is on. I would say no and he would say I have stated switch it on. I obeyed and switch on the recorder and the interview started. He only consulted me when he ran out of questions. After the

first instance I was upset but never confronted him. He repeated this action again with the second preliminary interview. The problem was not the asking of the question but he did not explain the whole research aim to the informants.

In an instance after the greetings he went straight to ask the informant how old was the road. This was in Guno which also had a road. The informant said almost two years then he turn to me said the road is two year and then continues with the demographic questions. After the second instance, I told him it is wrong to get people talking when they are not aware of what the information will be used for. I told him from now on he should allow me to do the talking and that his duty is to translate. He did not make light of my utterances. He replied in an angry tone do you think I am dumb, I have gone through these questions over and over and I cannot always allow you to talk to me before I translate them. I told him the time will come but now it too early for that because I am testing the strength of the questions and it ability to invoke the right responds so he should allowed me do the talking while he translate. He can alert me if he noticed that the questions were not easy to understand.

He never liked it, so as soon as mention a phone call he took during the interview he said I am a Dagomba and I was born and raised in these communities I understand my people. You cannot come from Accra or Europe to tell me how to treat my own people. You know we are age mate and all other things being equal I should also be reading my master by now. At this statement I told him it is over and he quickly agreed and packed the motor and asked me to found my way home. I tried explaining myself to him that it my research and he has to do things my way. It was still late morning because latest by 6:00am we left home for the communities. He agreed to take me home because of my friend and after which I have to find myself a new driver and translator. The resting of the day we spent arguing on the motor going home. The argument intensified on our way home, he stopped again to walk off because I told him he is not indispensable to the research as he think himself to be. I told him I had Dagomba friends in the University of Development Studies (a university in northern Ghana) who wanted to be my translator but just because my friend recommended him that's why I am stark with him otherwise I had my own plans for a translator in the University. I concluded you can go and I would find myself a translator just by a phone call after all I am also a Ghanaian not an European. We arrived home and we departed without a word to each other.

In the evening Zack came to apologies and we talked issues over. I told him it will be good for me if he goes according to my leadings. He agreed but during our conversation that night I realized Zack sister is the girlfriend of my friend and my friend has promised Zack he will help pay for his entrance fee should he gain admission to the tertiary institution. From this I felt Zack was under some sort of moral obligation to be my translator. But he quickly assured me that is not why he is back. He said “I have enjoyed these last days with you. The places, communities and farm lands we have seen are not things I get to do for myself. I have enjoyed it and I am about entering the tertiary institution and your research will help me in my future journeys”. I then asked him to teach me how to greet and respond to greetings which he gladly did. “Daasiba”, “Antiri” and “Ananwula” represent morning, afternoon and evening greetings respectively. The respond was or is a simple “Inaa” meaning ok or good. We also agreed our phones will be on salience during interviews and after permission sorted from an informant he can ask the demographic questions which he had mastered.

3.2.3 Entering the two subsistence communities: Gatekeepers, My Status and Role.

After I chose my study communities my anxiety over a study communities had totally diminished but a new one grows in its place. How to get access to the study communities for the interviews? As I talked to Zack about how to approach their chiefs, he said kola nuts are traditional accepted among northern tribes. He took me to an elderly woman who sells kola nuts and I inquired about the quantity which is acceptable. The old lady replied “any quantity will do but it must be in even numbers”. Once in the community I must found myself an elderly person or an opinion leader who will lead me to the chief and elders. Chiefs and elders are the custodians and protectors of the land so I must first seek their consent before I can start interviewing their people. The person who led me to the chief and the chief himself were my gatekeepers in each community. As stated by Lewin (1947: 146) gatekeepers are those who are in power to determine in and out of a community. They determine is to come in, who is to promoted or kept out of the community.

By 7:00 am the following morning I was in Moglaa the community without road. I saw a woman drying Shea nuts. Shea butter processing is a livelihood activity for northern women. I approached, introduce myself and where I am from through Zack and told her about my research

and asked if she knew an opinion leader or an elderly person who can lead me to the chief's palace. She pointed to a house to us. I thanked her and I knocked on the house, greeted, introduce myself and my mission through Zack. The man agreed to lead me to the palace. He took the kola nuts and said it was tradition to keep part of the kola nuts as the one leading me to the palace.

At the palace I was asked to wait outside while he first presents my mission to the chief and elders. After few minutes I was asked to come in to meet the chief. Fortunately the chief was a graduate of the University of Ghana. He gave us a bench under a tree near the palace and the conversation began between two old boys of the University of Ghana, We share experiences of our days as undergraduate students. He shared his experiences about his struggle to become a chief and his family heritage as royals of the land. I was introduced to as many elders and people who visited the palace as a student coming to conduct a research in the community. He taught me a lot about the community and their culture on chieftaincy, inheritance and agriculture even before I started my interviews. The chief was my first respondent.

In Yong, fortunately the first person I approach to acquire about a person who can lead me to the chief was the prince of the land who told me through Zack that his father the chief was out. He took the kola nuts and gave us permission to start the interviews and assured me that he will inform his fathers and the elders. And so I started the interviews. On the next day the prince took me the chief and elders of the land. The chief told me his son the prince had informed him and the elders about who I was and my mission in the community. He had received my gifts of kola nuts. One thing peculiar to all Dagombas is that, whatever you present as gift you have to taste for it. Thus in both communities I was give two kola nuts one for myself and one for Zack to eat as we sat and talk about my purpose in the community.

On the field my status or positions were many. I was first and foremost a student researcher from Norway, Ghanaian, an Akan, a son, brother and an old student. These statuses ascribed unto me an insider position at some times and an outsider at other times (Mullings, 1999). My status was simply the position I occupied in relation to the informants and the community at large. Each status came with its own responsibilities, duties, rights and privileges. That means a different role for each different positions I occupied (Linton, 1936). During the interview with the chief of Moglaa I was a student researcher so my duty was to ask question but I was also an old student

and a Ghanaian which also implied that I was an insider. “Boys see the road on which you travelled to the community. It’s bad the first request of the people when I was made chief was about the road. Chief, do something about our road”. In Ghana “boys or boys boys” is a word used in informal conversation between friends and equal. Other than that he would have called us by our names. Thus by calling Zack and I boys elucidated the informal relationship that has developed between two old boys of the University of Ghana.

Plate 1: A photo of me, Zack, the chief and elders of the two subsistence communities. Photo taken by men in the palace.



Among the few Christians I meet who could speak English I was a brother and a son. One Christian informant said “brother dash me one Cedis for soap to wash my clothes” I refuse his request primarily because others were watching. I begged him to stop before others around also asked for money before they granted interview. A pastor I interviewed constantly referred to me as son during the interview. Among informants who could not speak English or Twi my status was a student researcher who only asked question and recorded. To such informants I was thought of as an outsider most of the time. The outsider position allowed a high degree of objectivity because informants saw that I was neutral (Fonow and Cook1991; Mullings, 199). Working on roads which are normally provided by government or outsiders informants open up

to talk more objectively about the issue because they felt it is only through outsiders that they get such social infrastructures.

3.3 Sample Population

After purposely selecting the context of a study the next is sampling or selecting of informants for the study (Bryman, 2012). It is impossible for a researcher to obtain information from the entire population thus the researcher needs to select a small group from the larger population for the acquisition of information (Rice, 2010). In this project I employed the convenience sample method to sample respondents. According to Bryman (2012) it is the kind of sample that is available to the researcher by virtue of its accessibility. This meant that only subsistence farmers whom I approached, who had the time and were willing to talk with me were interviewed because I was in a subsistence community and most people were subsistence farmers.

The snowball and the cold calling sample were also employed to sample informants. The snowball sample implies I make initial contact with few people who are relevant to the research topic and then uses them to establish contacts with others (Bryman, 1999, 2012: 202). Through this method I contact a few farmers on the field. Through the snowball I contact mostly female farmers who had their own farms and female land lords. The cold calling sample also meant knocking on the doors of informants introducing myself and asked if they have the time, willing and ready for an interview with me (Longhurst, 2010). These sample methods were very necessary on the field because it meant that only subsistence farmers who were ready and willing to talk with me were interviewed. The snowball sample and the cold calling sample methods can also be seen as some sort of convenience sample because it is also base on availability and accessibility of informants (Bryman, 2012).

Although the feedback of using these samples was great it was time consuming. There were instances informants asked me to wait for them to finish whatever they had their hands on, some informants told me to come back the next day. The convenience methods of sampling also meant that there was a high possibility of interviewing two or three farmers from the same household who work on the same family farm. Since subsistence agricultural is a family activity and the communities were traditional the extended family or household dominate. Interviewing two or three farmers from the same household or family cultivating the same land was not bad but it

only meant I could be repeating the agricultural experience of a family or household. Extra caution and care were taken to make sure had their own farms especially when the informant was none land lord.

Through these methods I obtained a sample size of sixty (60) subsistence farmers, thirty (30) from each community. Apart from the sixty subsistence farmers, I had informal conventions with two plough operators and two transport operators (a driver, a transport officer). I also had a telephone conversation with a human resource personal of the Millennium Development Authority (MiDA) regional office in Tamale. I had informal conversation with the director of the transport unit of the Ministry of Food and Agriculture Tamale. In Accra I had an informal convention with the Head of Research, MiDA. These group of informants I termed none farmers. I talked with personals from MiDA because the road in the community under consideration was constructed under the Millennium Development Transport Programme of Millennium Development Authority. The preliminary interviews were 5 and are not used in my analysis.

Out of the sixty subsistence farmers interviewed twelve were females the remaining forty eight comprises male subsistence farmers. More males were interviewed because in the communities agriculture is a family activity under the control of men who are the heads of the households. The entire household farm under the male head that controlled all agricultural land. Females were primarily Shea butter processors and either farm under the husband or their father. Eight out of the twelve female informants had acquired lands from their husbands for their own farms. Four were widow heads of the household because their male children were too young. Among the four widow household heads three were from Moglaa and one was from Yong. Out of the total of twelve female informants ten were from Moglaa and two were from Yong.

The forty eight male informants were not evenly distributed over the two communities. Twenty two (20) were from Moglaa out of which thirteen were landlords. The male informants from Yong were twenty eight (28) out of which fifteen were land lords. The rest of the male informants were categorized as none land lords Out of the total none land lord population seven were from Moglaa and thirteen were from Yong. None landlords were male farmers who still live in their father's or the external households married or not who have their own farms. Female landlords were all nuclear landlords. Because females were temporary land lords' until their sons were of age to manage the family and the farm.

Table 1: A table of respondents grouped into landlords, gender, none land lords and none farmers.

Subsistence Community		Moglaa	Yong
No. of Respondents		30	30
Gender	Male	20	28
	Female	10	2
No. of land lords	Male	13	15
	Females	3	1
No. of none land lords		14	14
No. of none farmers		7	
Total of Respondents		67	

3.4 Methods of Data Collection

For me to understand the experiences and perceptions of subsistence farmers on how road access impacts on their sustenance (subsistence agriculture), I employed interviews, simple observation and photography as methods of data generation. Much emphasis is placed on interviews because it the main method used in collecting data. The simple observation method and photography were used primarily to generate data to support the interview data. According to human geographers qualitative methods such as these allow the exploration of meanings, experiences, emotion and values that make up people life worlds which may be taken for granted (Ley, 1974;

Seamon, 1979; Clifford et al, 2010). Thus such methods allow informants to present their world to the researcher in ways that are none exploitative or oppressive (WGSG, 1997; Moss, 2001; Clifford et al, 2010).

Interviews come in three forms or types (structured, unstructured and semi-structured interviews) all of which involve conversations with informants to elicit information through the asking of questions. On the field I employed the semi-structured interviews also referred to as informal conversations because it is an excellent way of gathering information (Longhurst, 2010). During interviews I used open questions and I could start with any of the questions that easily came to mind after the demographic questions. Sometime I could start with the general question “*Do you think roads are important for subsistence agriculture, how*”? After this I could continue with either questions about agriculture production or marketing. In instances where my translator felt certain questions have been well discussed in the opening question or conversation he informed me to jump to the next question. In many instances I asked him to ask the question for more clarification on the issue because semi-structured interviews do not follow strict structure (Longhurst, 2010).

3.4.1 The Interview

Through semi-structured questions all sixty respondents were interviewed. Interviews were conducted under trees, in the home floor of farmers and on mats. Where the farmers considered appropriate to talk with me were the places the interviews took place. In the relation to the time of interviews farmers’ convenience was placed high above mine. In some stances either through the snowball or cold calling sample I was either told to wait or come back the next day which I gladly obliged to. Only farmers whom I met who were ready, willing and had the time to talk with me were interviewed. These practices created conducive environment for farmers to share (Longhurst, 2010). All interviews were done in the native language Dagbani however three informants had their interviews conducted in English because they preferred I interviewed them in English. The interviews questions were in relation to the two research questions. Mainly how road access influence subsistence agricultural production and marketing.

The questions were structured to elicit the current production and marketing experience of farmers in Moglaa. Furthermore the speculations and assumptions of farmers in Moglaa about

the “would be implications” of roads on subsistence agriculture in their community was also collected. In Yong their past agricultural experiences were collected in relation to when there was no road and their agricultural experience in relation to the road were also collected. In both communities’ farmers’ experiences and perception about the rural transport services were also sorted through the questions. Finally farmers’ recommendation concerning how to improve productivity and profitability of subsistence agriculture were also sorted. I realized from the interview that roads and subsistence agriculture is such an open issue people are willing and ready to talk about and most especially to strangers (researchers). Informants did freely express their views, experiences and emotions on the road - agriculture relation. From the three interviews conducted in English I realized road and agriculture issues are subject worth the attention of subsistence communities. I also realized that interviews were time consuming. The longest interview lasted 59 minutes.

Plate 2: A photo of Zack and a farmer after an interview on boulders under a tree. Source: Author.



In Moglaa farmers’ production experience especially in relation to how they access factors of production (plough, fertilizers, weedicides, and pesticides) from Savelugu without road was collected. In relation to marketing of subsistence produce how farmers accessed the market in Savelugu was also sorted. In Yong farmers’ production experience in relation to how they accessed factors of production and the market without road some years ago were sorted. The

role of the road in their current accessibility of the factors of production and the market. Going by the list of partially structured questions guaranteed that, each informant or participant was dealing with the same issues as directed by the questions. The data collected through subsistence production and marketing questions served the basis of this comparative study.

3.4.2 Recording and Transcription of Interview

The electronic audio recorder was used to record all interviews. On few occasion I took note of things people said after the interview. On the field I always made a mistake of switching off the recorder right after an interview. I noticed this primarily with the English interviews. Informants still speak after the interview and some of these I wrote in my field notebook. After recording, all the Dagbani interviews were translated into English. I could not speak Dagbani thus recording interviews made the interview process smooth, time serving and enjoyable. It also allowed me focus on the interview process. Despite the tiresome, boredom and difficulties associated with transcribing interviews, I personally transcribed all interviews because one, it revealed major issues to me and gave me a sense of victory on the field.

3.5 Simple Observation

Webb et al (1996; Bryman, 2012) argued simple observation is an unobstructive observation of situation and event in their natural course. On the field I also did a lot of simple observations which were critical in understanding the subsistence agriculture process. After I have master the three types of greetings among the Dagombas I thought that is all. On the field one late morning it rained heavily in Moglaa. After a heavy rain I decided to see the nature of the road after rains. I saw farmers who were coming from their farmers greeting each other “Nitimasni”. I quickly wrote it done. When I came back to Zack and inquired. He said it is a special kind of greetings that is only used when it rains because of their savannah environment. Through this method I also realized that in the morning the communities are empty, in the afternoon there is live.

I inquired about and I realized in the morning they all go to their farms, return in the afternoon to rest and prepared food for the children who will be closing from school. The Muslims used that time for their afternoon prayers. They all return to their farms late afternoon when the sun was

about setting”. Zack’s explanation of these observations was not all I depended on. I talked to chief of Moglaa and the pastor in Yong about these event and they gave the same explanation to the events. The observations became data because the explanation of these three persons agreed.

3.6 Visual Data (Photographs)

During the field work I took photos of farmers and the communities. These photos were taken with the permission of the informants. Only those who agreed for their photos to taken were taken. Informant were also made to understand that their photos may appear in my thesis. These photos were taken by me, Zack or community members who were willing to take it. Some of these photos highlight the plough, the nature of the roads in the two communities and my meeting with the chief and elders of the two communities and some farmlands. Photos were taken primarily to substantiate claims of the place and the subsistence agricultural process (Bartram, 2010).

3.7 Secondary Data and Source

Although this work is primarily the end product of a field work however secondary data was also used. The secondary data include Facts and Figures on Agriculture in Ghana, Agriculture Production Estimate for Regions and District in Ghana, the District Assembly Profile of Savelugu/Nanton and Compact One of the Millennium Development Authority highlighting the reasons underlying the construction of the road. The secondary data also contained information about the agriculture issues and process in Ghana, population and other aspects of the study location.

3.8 Method of Data Analysis

The duty of every researcher can be group primarily into two. The first is that the researcher must obtained the reality from the informants and then present this reality (Aase, 2007). In this research, after obtaining farmers reality on the topic data was group under themes in relation to the research questions. Data was then qualitatively analysed in relation to the research questions and the theories employed in the research. This enabled me to present the reality of farmers. It

gave me the advantage of predominantly relying on the direct statements of farmers to present my findings. I employed primarily social status as the tool for data analysis however methods such as categorization was also employed as a tool of analysis data and presenting findings.

3.9 Research Ethics

Research ethics involve researchers behaving with integrity and in ways that are just, beneficial and respectful (Hay, 2010: 35). It means conducting ourselves morally and acting in accordance with notions of right and wrong (Mitchell and Draper, 1982; Hay, 2010: 35). There are three main reasons that necessitate researchers behave ethically on the field. These reasons include the fact that ethical research will help protect the right of individual, communities and environments affected by the research. The second has do with creation of favourable climate for continues research. Finally there is high public or institutional demand for accountability on students and researchers (Hay, 2010: 35). Maximum attention was paid to the above reasons during field my work.

On the field my first step was always to get the consent of farmers. In both communities I made sure I sort the consent of the leaders of the community. This proved to be a great tool on the field. I promised to purchase the drug for a sick person in an informant's house. The informant and some other informants had inquired from the chief if he was aware of my presence in their community. The chief assured them he and the elders were aware and that they should be comfortably talking with me. To informants I first introduce myself, where I am from, my research topic and the information I needed through my translator. After this I then asked the person if he or she will be willing to talk with me. I also sort their concern about the use of the audio recorder before recording began. I then assured them that everything they say is for academic purposes only.

The use of the convenience method, the snowball and the cold calling method presented some level of ethical dilemmas. For instance with the cold calling method I called on farmers in their homes, under trees and shades. The dilemma I faced was that informants may consider this as invasion of privacy. To overcome this I resorted to talk with farmers in open places. Farmers

normally sit or lay on benches under tree and other shades near the houses after they return from the farm in the late morning or early afternoon. I was very careful as to how I approached informants whom I interviewed in their homes. After knocking on the main door which is a short door I introduce myself and my purpose and then asked for anybody I could talk to in relation to agriculture. One way or the other they always called the head of the house and they were mostly men. As expect I stood outside till I was asked to come in. When I enter I introduce myself and asked for an interview. With the snowball method of finding women land lords the dilemma was whether to tell them about who informed me about their status as women who have lost their husbands. Would it be deception if I do not tell her and if I tell her will it be inappropriate because I disclose the identity of my informant? In the case of the chief of Moglaa who informed me about my first female informants I first introduce myself and my research aim and then told her about the fact that it was the chief who had informed me. As I told her about the chief she quickly informed one of her children to go and call another two widow friends of her whom I also interviewed. The action of the woman I suggest was out of respect for the chief because Ghanaians really respect their chiefs.

In relation to the widow in Yong I did not disclose the informant's identity. After interviewing the informants I asked if he knew any widow I could interview. He pointed up to the place and I said there is a woman there like that. From the statement I realised there is no relation and therefore it would not be necessary to disclose the identity. The woman in question may or may not know him. Irrespective of how I got in contact with informants they were willing and ready to talk with me. This I strongly believe is because the focus of the research. The research was about individual farmer's experiences as it relates to roads. Every informant spoke for his or herself and for that matter was not stepping on any toes thus they freely shared their experiences, emotions and their perceptions.

3.10 Validity and Reliability

Kirk and Miller (1986; Kapborg and Bertero, 2001) argued that issues of validity and reliability are applicable to every research but in qualitative research they are built into the design of the study thus must not to be treated as issues of measurement. They continued that, issues of

reliability are often included under issues of validity. Validity is defined as establishing the truth and authenticity of a research (Young-Hee, 1998; Kapborg and Bertero, 2001 : 54). In other words validity concerns the credibility or integrity of the research conclusions (Bryman, 2012). There are two main types of validity (internal and external). According to Kapborg and Bertero (2001) high priority must be given to internal validity.

Internal validity is achieved when the researcher demonstrates the reality of the informants through a constant line and quotations from their interviews (Kapborg and Bertero, 2001: 54). In this project there are frequent and direct quotations from my interviews with the informants to demonstrate evidence of my statements and the description I made. Using categorization and social status further required the consistent quotation from my interview with informants. As argued by Morse and Field (1996; Kapborg and Bertero, 2001) quoting from interview prove there is evidence for the statements and the descriptions made because data can be link to sources and illustrated by quotations.

External validity is deals with issues of transferability. That is the research finding should be transferable to other similar situations. External validity is difficult to establish because qualitative research is very specific to particular places (Lincoln and Guba, 1985; Kapborg and Bertero, 2001). That is qualitative research is geared towards contextual uniqueness and significance of the aspect of the social world under study (Bryman, 2012). This is especially the case in this work because this study was conducted in a context which is unique in term of subsistence agriculture in Ghana in that they do not produce any other crops except staple crops. In order to ensure the transferability of my research finding I gave a thorough description of my methodology and the theories employed. I also give a thorough background information on my study area and the process that went into it selection. As argued Lincoln and Guba (1985; Kapborg and Bertero, 2001) transferability emphasize accurate description of procedures.

In this research the use of a translator was a critical factor that threatens the validity of the research. My translator though had had all his education in English yet he had no formal training in research. This was a great dilemma on the field. To overcome this I gave him a thorough education on the research. I made him go through the interview questions over and over again.

Because language barrier could affect the credibility of my data, as I made him understand the research, I also conducted preliminary interviews and transcription. In this way most of the translation problems that might have risen during the main data collection was dealt with. Translating questions from English to Dagbani and vice versa could affect the meaning. The preliminary interview gave my translator the opportunity to learn how to translate from English to Dagbani and vice versa by looking for cultural match in some cases.

Another way in which I dealt with the treat of the translator is that I never gave him control of the interview process. I also added some questions and modify other questions after the preliminary interviews which made translation easier. For instance I introduce the general question which I either asked first or last. “Do you think roads are important for agriculture in this community” How or Why? This question was not part of my interview questions. This was a way of making informants clarify many of the issues they have mentioned. I had the opportunity to do the very first interview in English and two others in English and these three interviews was a great check on the rest of the interviews.

In conclusion the use of qualitative methods in both data collection and analysis was a very good way of understanding the experiences and perception of people about the road transport - agriculture relation. The use of semi-structured interview questions and the informal conversation allowed individuals informants to express their emotions and thought on the topic. Despite the benefits of semi-structured interviews it also come with it challenges. Employing this method on the field is time consuming. There were instance I spent about 59 minutes talking with one of the English respondents. The use of a translator posed a threat to the validity but much effort was made to improve the validity of the research through the preliminary interviews and transcription.

CHAPTER FOUR

STUDY CONTEXT

4.1 A general Overview, Ghana

As a West Africa country Ghana occupies a total land area of about two hundred and forty thousand square kilometers (240,000 sq. km) (SRID, 20011, Boateng, 2014). Land covering is about 96% and water covering is about 4% (SRID, 20011). The September 2010 population and housing census estimated Ghana's population around 24,658,823 giving an approximate density of 103.4 inhabitants per sq km. The country is generally divided into two (Northern and Southern Ghana) base on climate (rainfall) patterns and vegetation (Yaro, 2013, Boateng, 2014). But for administrative purposes Ghana is divided into ten (10) administrative regions. Generally speaking, Northern Ghana comprises the three northern regions, Northern region, Upper East region and Upper West Region (Yaro, 2013). The rest of the regions primarily constitute Southern Ghana. Ghana can further be divided into five main zones for agro-ecologically purposes base on climate, vegetation and soil. These zones are the Rainforest, Deciduous forest, Transitional zone, Northern savannah (Guinea and Sudan savannah) and the Coastal savannah zones (SRID, 20011).

4.1.2 Drainage, Climate and Vegetation

The Volta river is the major drainage of the country. The climate conditions in Ghana are the result of two principal airstreams or air masses. The country's two main seasons are associated with these two air masses. The hot, dry, tropical air mass or the harmattan from the north-east produces the dry or hot season in Ghana and the moist maritime air mass from south-west is associated with the rainy season (Boateng, 2014). Southern Ghana receives more rain than Northern Ghana. Annual rainfall average in the south is between 1,270mm – 2100mm. In the north the annual average rainfall is between 1100mm-1270mm. The south of Ghana experience two rainy seasons (April- July and September- November) while the north experience a single rainy season between April - September. This means the north experience a long dry season than the south. The agro-ecological division of Ghana reveals the influence of climate on the vegetation of Ghana.

The Rainforest, Deciduous forest, Transitional zone and the Coastal Savannah are all predominantly vegetation cover of Southern Ghana which receive much rain. The Northern Savannah is also predominantly associated with Northern Ghana which receives less rain (Ibid.).

Figure 1: Map of Ghana showing the ten administrative regions and their capital towns.



Source: www.mapsoftheworld.com/ghana/ghanapolitical-map. Accessed on 8/05/2014.

4.1.3 Agriculture and Transportation

Ghana's national economy is divided into three main sectors (agriculture, service and industries). Agriculture is the dominant economic activity constituting 40% of the national economy and employing or providing livelihoods to over 50% of the population (Africa Development Bank Group [AFDBG], 2005, SRID, 2011, Yaro, 2013, Hasselberg, 2013). The agriculture sector is divided into five main sub sectors. These include Cocoa 14.3%, Livestock 7.1%, Forestry 11.1%, Fishery 7.6% and Crops 59.9%. The focus of this research lies in the area of crop agriculture thus it becomes imperative to throw more light on crop agriculture or production in Ghana. The crop subsector dominant agriculture sector but it is mostly subsistence and on small holder basis. About 90% of all farms are on small holding basis and are subsistence involving traditional implements like hoes and cutlass (SRID, 20011). This implies that farmers' individual contribution may be insignificant but collectively they form the 'bedrock' for the economy of Ghana providing the need staples for the nation (Ajiboyen and Aflolayan, 2009, Binswanger – Mkhize and McCall, 2010).

Transportation in Ghana is generally classify under the service sector and constitutes 35% of the national economy (SRID, 2011). The transportation sector in the country is dominated by the road sub sector which is also the focus of this work. Currently Ghana boast of over fifty thousand kilometers of road network of all classes. The Ghanaian road system is considered to be good by tropical Africa standards. The dominance of road transport is seen in it contribution to freight and passengers traffic movement. Roads account for about 95% of freight and 97% of passenger traffic movement in the country and remain the only mode of transport available to subsistence communities and rural dwellers (African Review on Transport, 2009). Thus governments after governments have focus on road construction adding to the total road network of the country (ADBG, 2005, Tarr, 2014). Road Transportation service in Ghana is dominated by the private sector.

4.2 Sample Region

“The Northern Ghana” used in the context of this study refers to northern region which capital town is Tamale. Northern region is the biggest region in Ghana with about 30% of the total land area of Ghana and remains the dominant food producing region in Ghana (Hunter, 1967, SRID,

2011, Yaro, 2013). This region was selected because of my past experience in the region as stated in the research problem. The region is also predominantly savannah, rural and poor with subsistence agriculture as the main source of livelihood (Yaro, 2013, Hasselberg, 2013). Agricultural production for export does not exist in the region (ODI, 2005; World Bank, 2011; Yaro, 2013). Some cropping systems in the region include multiple cropping, crop rotation and intercropping (Kombiok et al, 2012). Out migration is a common phenomenon in the region (Yaro, 2013). Transportation in the region is mainly by road involving both motorized and none motorized transport and are more visible in urban areas (Abane, 2013).

4.2.1 Sample District

This study was conducted in Savelugu the district capital of Savelugu/Nanton district assembly located in the northern part of the region (Savelugu/Nanton District Assembly [SNDA], 2011). The district shares boundaries with West Mamprusi to the North, Karaga to the East, Tolon/Kumbungu to the West and Tamale Metro Assembly to the South. It has a total land area of about one thousand seven hundred and ninety square kilometers (1790.70 sq. km). In a sentence the district generally reflect the characteristics of the mother region. Most of the communities in the district are rural and about 80% of the population reside in these rural areas. The population of the district is one hundred and thirty nine thousand two hundred and eighty three (139,283) according to the 2010 population and housing census (SNDA, 2011).

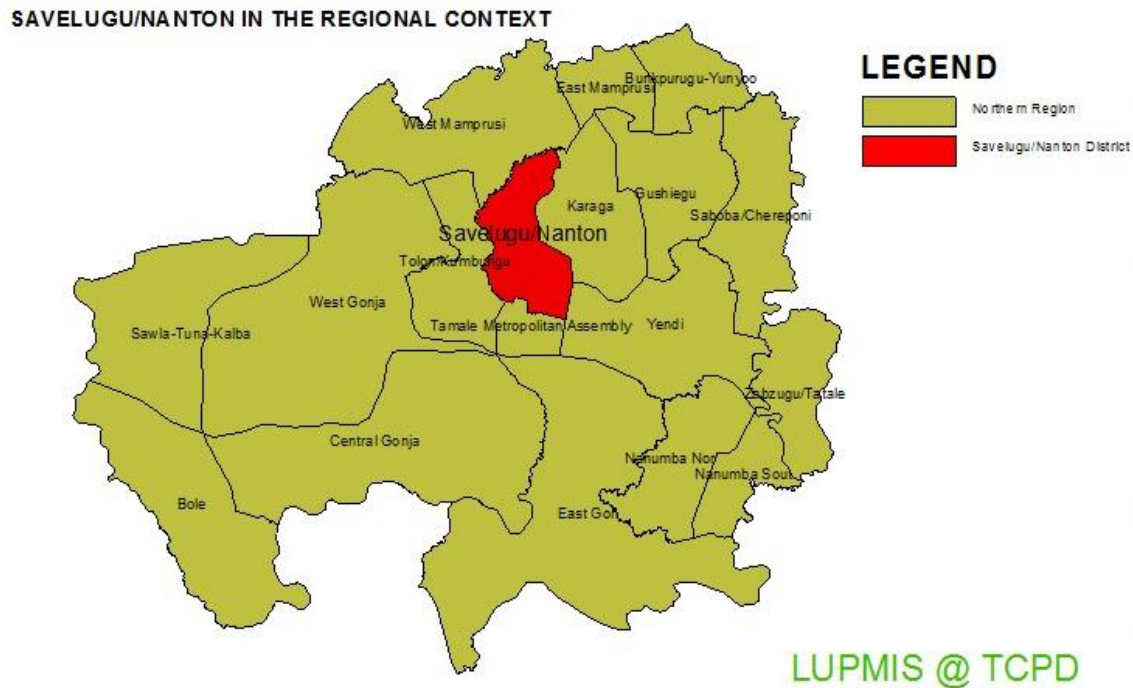
Subsistence agriculture dominates all types of livelihoods in the district and is primarily rain fed. It involves the cultivation of staples like rice, millet, groundnuts, yams, cassava, maize, cowpea and sorghum. Subsistence agriculture employs about 97% of the economically active population (18-54). The district has the potential for livestock rearing due of it savannah nature but one way or the other livestock rearing have not gain root. The agricultural season start with the first rain in late April or early May through to late August or early September. The amount of rainfall (600mm to 1000mm) received is said to very low compare to other parts of the country yet enough for one planting season (SNDA, 2011). Agricultural activity in the district is highly dependent on family labour and the use of traditional implements like the hoe and the cutlass. Households' sizes remain large in the district to meet the family agricultural labour requirement. The largest household size comprises forty seven (47) members and the smallest house comprising one (1) member. On the average eight (8) members constitutes a household (Ibid.).

Table 2: Provisional production of some major crops in selected districts in the Northern Region (2012) highlighting the study district (SRID 2012).

Provisional Production of some major crops in selected districts in the northern region (2012). Figures in Metric Tones.								
District	Maize	Rice	Millet	Sorghum	Cassava	Yam	Groundnut	Cowpea
Bole	7653	987	2178	3745	26746	59934	2752	1971
Central Gonja	5634	2076	1148	1576	100083	73500	8558	1997
Kpendia	8657	4228	7	1399	34366	51794	2925	1000
East Mamprusi	8149	1536	5340	3893	14210	68937	10030	7838
Gunshiegu	9356	6894	3461	5148	68627	33334	9545	5075
Karaga	8300	3750	3325	6449	30555	23974	6803	3900
Nanumba North	9891	978	2750	7613	192001	268830	10929	2112
Nanumba South	7450	18330	1450	9124	116610	244074	7018	2851
Saboba	2774	3245	3287	5910	5169	60249	7201	3116
Chereponi	1138	1712	1283	4563	7082	16046	2517	1309
Savelugu/Nanton	13319	27134	4125	5324	23644	96651	26050	15423
Sawla/Tuna/Kalba	29835	2453	5782	12920	17832	169492	9515	3891
Tamale Metro	13197	42658	2114	3762	15606	67012	16841	5814
Tolon/Kumbugu	23775	35500	4338	13965	75625	56832	20367	6714
West Gonja	11180	1897	5846	9588	430955	179604	16506	10672
West Mamprusi	8900	13034	9371	7982	19615	52490	15672	6130

Transportation wise, over 50% of the roads in the district are seasonally unmotorable. Furthermore, transport services to rural communities in the district are very poor. Bicycles remain the dominant means of transport and as such every household has a bicycle. But in 2011 some roads (bituminous) were constructed through some of the communities in the district. These roads were results of the Millennium Challenge Transportation Improvement Programme. The district assembly speculates income levels will increase because the road will increase agriculture productivity and profitability (SNDA, 2011).

Map 2: A map of Northern Region showing Savelugu/Nanton district.

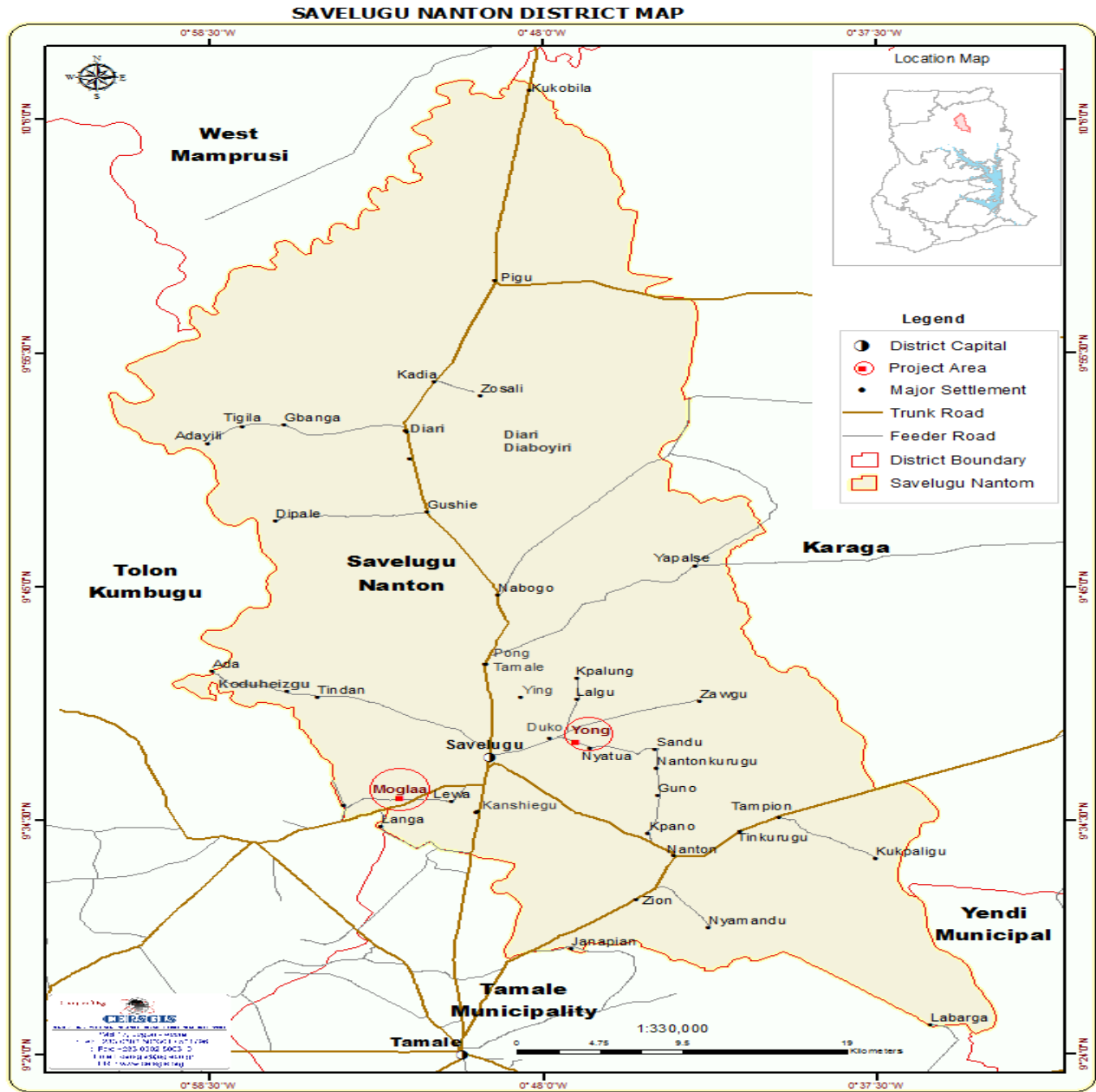


Source: Adopted from SNDA, 2011.

4.2.2 Specific Study Communities: Yong and Moglaa

Yong and Moglaa are rural subsistence agriculture communities in Savelugu. Moglaa is the subsistence community without road and Yong is a subsistence community with road. These two subsistence communities have Savelugu as their market town. This is because Savelugu act as a focal point for trade and services for both communities (Swain, 1997; Countryside Agency, 2000; MAFF and DETR, 2000; Powe and Shawn, 2004). Moglaa and Yong were selected with Savelugu because the study area(s) must be purposively selected in relation to the research problem (Bryman, 2012). This implies that, my research questions guided my choosing of the study area(s). Moglaa and Yong were selected because of the similarities they shared which made it easier to investigate the implications of road access for subsistence agricultural production and marketing. Both communities were Dagomba communities with the same cultural background.

Map 3: A map of Savelugu/Nanton District showing Moglaa and Yong

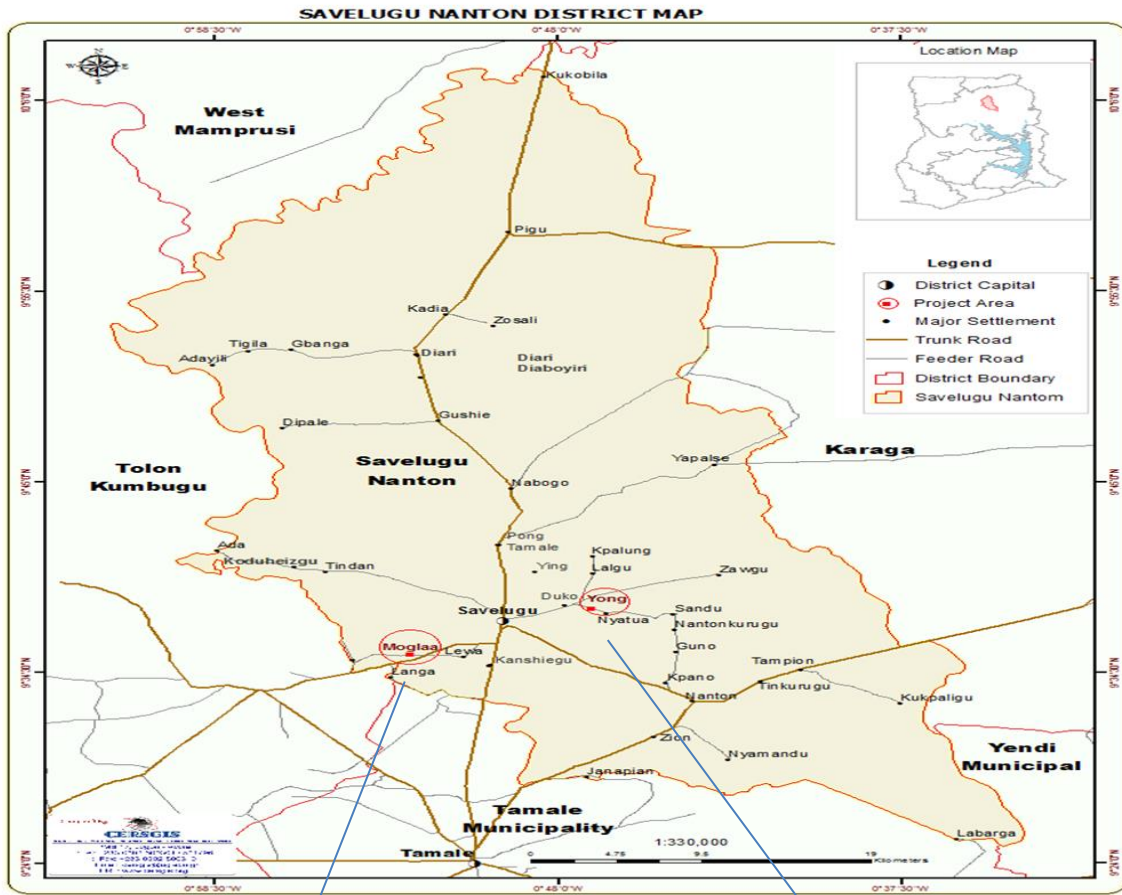


Source: Center for Remote Sensing and Geographic Information System (CERGIS), Department of Geographic and Resource Development, Ghana, (2013).

Their culture is male dominated (patrilineal society) thus all resources for agriculture are controlled by men. Agriculture is mainly under the head of the household (fathers or husbands). Females who had their own farm lands were women who have lost their husbands or women who have acquire a piece of land from their husbands for their own farms. When widows become the head of the household it is the duty or responsibility the male head. Both communities shared the same staples of maize, rice, sorghum, cowpea, groundnuts, yams and cassava. This is evident in their favourite diet Tuo Zafi popularly known as TZ in Ghanaian parlance. T Z is a meal made from maize normally eaten with ground nut soap. On the field I realize that not a day will pass without a household eating TZ. I also got stark with TZ for supper most of my days on the field. Farm sizes are general small ranging from two acres to 11 acres in Moglaa and 2 to 9 acres in Yong.

Household size is generally large in both communities. In Moglaa household size ranges from 7 to “I cannot remember”. It is common to hear land lords say my family is very large and I cannot remember or give an exact number. The same situation was identified in Yong where household size ranges from 5 to I cannot remember. Both communities also sold or market the same crops. The popular means of transport available to subsistence farmers in both communities include vehicles, motor tricycle, motor cycle, bicycles and walking. With the same cultural or ethnic background, similar dietary patterns and similar staples subsistence farmers in Moglaa and Yong employ the same production and marketing methods in their agricultural activities. In subsequent chapters much of their production and marketing methods will be discussed. This meant that the road in Yong is the major difference between both communities in relation to agricultural production and marketing. According to a telephone conversation with a head member of the Millennium Development Authority, Tamale, the road was completed in 2011. This was further confirmed by an informal conversation with the head of research, the Millennium Development Authority national office in Accra. My interviews also confirmed that the road in Yong was completed in 2011. Thus subsistence farmers in Yong had had the road for at most two planting season at the time of my visit. This made it easier for informants to remember their immediate past experience when they were without road especially as it relate to their livelihood.

Map 4: Map of the study communities and the two communities and their roads. Source: Map by CERGIS (2013) and Photos by Author.



In a nut shell the northern region of Ghana make a great study context for road transport and subsistence agriculture research. Because it is primarily rural and subsistence agriculture is the paramount and dominant livelihood in the region (Yaro, 2013). Road transportation is generally poor and thus effort to improve agricultural production in the region has been through the construction of roads. Again the region is dominated by Dagombas making it possible for comparative study of similar communities in the region.

CHAPTER FIVE

THE INFLUENCE OF ROAD ACCESS ON SUBSISTENCE AGRICULTURAL PRODUCTION.

5.1 Introduction

This chapter addresses the first research question. The focus of the chapter is to primarily highlight the implications or effects of road access on subsistence agricultural production by looking at how road access influences or affect subsistence agricultural production activities. The discussion in this chapter is based on the current or ongoing subsistence agricultural production experience of subsistence farmers in Moglaa without road and the immediate past experience of subsistence farmers in Yong when the road did not exist. Furthermore the speculations or assumptions of farmers in Moglaa concerning “what could be the possible effects” of roads on their agricultural production are matched with the real current or ongoing experience of farmers in Yong with a two year old road at the time of my field work. The discussion is also in relation to the theories employed in this research. Generally speaking the discussion of how road access influences subsistence agricultural production will be in relation to access to the factors of agricultural production. I will finally highlight coping or adaptive mechanism in northern subsistence communities and the results of the road in Yong in relation to their subsistence agricultural production.

5.2 Issues of Subsistence Agricultural Production in the Northern Ghana

5.2.1 Subsistence Agriculture

Subsistence agriculture in northern Ghana is rain fed. In all rain fed agriculture the most important thing is the rain. *“To me the most important thing for subsistence agricultural production is rain. You can prepare your farm land, buy all the fertilizers but when the rains do not come you cannot plant or if you plant it will yield not enough for you”*. This is the statement of a subsistence farmer suggesting that the most important resource for subsistence agricultural production is the rain and it lies outside the control of farmers. The statement also illustrate the rains as allocative resources from the external environment which determines production outputs

in subsistence agriculture. Without the rains farmers cannot plant and if they plant output of production will be poor. At the coming of the rain subsistence production begins with the preparation of land through sowing to the harvesting of crops. Harvesting ends subsistence production activity according to the interviews. The four or five (April- September) months of rain is all subsistence farmers have in both communities (Yong and Moglaa) to produce all that the household will eat and more. Subsistence farmers in both communities have the same rainy period which determines the time frame of production. Subsistence farming activities are organized just like a formal institution in the northern Ghana in terms of when to go the farm and when to close.

From my observations I noticed that both communities are empty in the morning but lively in the afternoon or late mornings. According to my interviews subsistence farmers have a time to go the farm and a time for break. This time schedule is due to the nature of their savannah environment. Thus farmers go to the farm in the morning (6 Or 7 am), return home for break in the late mornings or early afternoons (11am or 12 noon), when the sun is high and then go back to the farm late afternoon (3 pm). This time schedule according to farmers help make them more productive. Finally, the interviews revealed that, the main ideology of subsistence production remains production for household or family consumption. This is to say that in both Yong and Moglaa the main or primary purpose of production is to feed the family and to the greatest extent the environment or community. The traditional or social reason for production still remain central to both subsistence communities irrespective of the road in Yong. In both Yong and Moglaa informants identified themselves as people who farm to feed their families. This is the statement of two farmers one from each community. In Moglaa the chief told me: *“Moglaa has always been a farming community and we farm to feed our families”*. In Yong a farmer told me: *“I farm to feed my family”*. In both communities farmers accepted their identity as people who farm to feed their families and not people who farm for economic gains.

Thus the road in Yong has not changed the subsistence mentality of the subsistence farmers in Yong. Subsistence farmers in Yong still subscribe to the social idea of producing to feed the family and this idea supersedes the economic idea of production for market gains despite the road which they now enjoy. In a nut shell the road has not change the basic or primary reason for

subsistence production. As illustrated by the quotations above subsistence farmers still see agricultural production in social terms than economic terms. Subsistence farmers still produce first and foremost to feed the family and to a greater extent the environment. Aspects of producing to feed the environment will be discussed in the next chapter.

5.2.2 Crops of Production

A summary of the issues of subsistence agricultural production in the northern Ghana indicates that subsistence agricultural production in the northern Ghana is rain dependent or rain fed. It is all about producing to feed the family. Because farmers in both communities produce to feed their families the crops of production are the same in both Yong and Moglaa. The idea here is that because farmers in Yong still maintain the social production reason and have not become any more economically minded, they still produce the same traditional crops as farmers in Moglaa. Thus from the interviews food crop staples of production are still the same in both communities and they include such food crops such as maize, millet, groundnut, yams, rice, sorghum, cassava and cowpea. Subsistence farmers in Yong were not producing any cash crops as at the time of my field work. Subsistence agricultural production in northern Ghana is so much about feeding the family that even female farmers cultivate the same crops as their male counterparts. The interviews illustrated that females also cultivate the same staples of maize, groundnuts, sorghum, rice and cowpea.

Why farmers in Yong still produce the same crops is explained by authoritative resources of norms and statuses. Already stated is the fact that farmers identify themselves as people who produce to feed their families. Furthermore agricultural production is under the control of the land lord or the head of the household whose role or duty is to feed the family. The role of the land lord is his honour. Thus a subsistence farmer must continue to produce what the family will eat which is not only his duty or role but his very worth in the community. This explains why both communities still produce the same staple crops despite the road in Yong. Because of this, subsistence agricultural production technology or methods also remain unchanged in Yong which means methods of production is the same in both communities.

The cutlass and the hoe still remain very important implements of subsistence agricultural production in the northern Ghana.

5.2.3 Modernization Influence on Subsistence Agriculture

Despite the facts that, the traditional purpose of subsistence agricultural production, staple crops of production and crops of production remain the same in both Yong and Moglaa, the interviews also indicated the influence of modernization (process of global inco – operation, Gregory et al., (2009)) on subsistence agricultural production in northern Ghana. For one to fully understand the implications of road access on subsistence agricultural production one must first understand or appreciate the influence of modernization on subsistence agricultural production and the subsistence community in general. The influence of modernization is experience in every human activity in this century. In the area of subsistence agricultural production it has resulted in what I term the mixed method of production. The mixed method of subsistence agricultural production means that, subsistence farmers are incorporating or combining modern methods of agricultural production into or with the traditional methods of subsistence production. Some of the modern methods or technologies of subsistence agricultural production includes tractor, plough machine, fertilizer, pesticides and weedicides. I termed it a mixed method because the modern methods have not completely overthrown the traditional technology or methods (cutlass, organic manure and hoe) of production. Both the modern and the traditional methods are being used concurrently. The mixed method of subsistence production is the most visible influence of modernization on subsistence agricultural production.

From the interviews I identified that, some farmers' use the plough machine while others use animal yoke yet other farmers employed the hoe to plough or prepare their lands. Furthermore while some farmers use chemical fertilizers others use animal dung yet others also combine both (chemical fertilizers and animal dung). An understanding or appreciation of the mixed methods of production will lead to a better argument or discussion on how road access influences subsistence agricultural production. I therefore would discuss in the following pages details of the mixed methods of subsistence agricultural production as it is been practice by subsistence farmers in subsistence communities of the northern Ghana.

The mixed methods of production is an experience in both the community with road and the community without road indicating that roads might have no hand in why subsistence farmers adopts the mixed methods of production. After all with or without road subsistence farmers are obliged to produce to feed their families. As the chief of Moglaa told me: *“Moglaa have always been a farming community and we farm to feed our families. We will continue to be a farming community with or without good roads”*.

Plate 3: Photos showing the mixed methods of ploughing. Source: Author. Photos showing me (author) was taken by my translator/interpreter.



The underlying idea here is that, roads may not be the reason for the adoption of the aforementioned modern implements or technology because these methods were present or practiced in both communities when they both did not have roads and are still been used in Moglaa which is still without a road according to the interviews. What road(s) do is rather to provide a speedy and easy access to these modern inputs. The modern farm implements are what I will refer to as purchased farm inputs or simply purchased inputs. Purchased inputs are farm resources or inputs which the farmer need to buy or pay for. Example includes chemical fertilizers (Johnson, 1973: 69). From the interviews I identified that farmers in both communities now put greater emphasis on purchased inputs as indispensable to subsistence agricultural production. This was seen in farmers continuous mentioning of government subsidies on

fertilizers and loans to help them purchased such inputs (fertilizers tractors and ploughs) as ways of improving subsistence agriculture in their various communities. It is therefore in the light of purchased inputs that I primarily discuss the influence of road access on subsistence agricultural production in the northern region of Ghana. I argue that the influence of roads on subsistence agricultural production can best be appreciated in relation to the modern farm inputs which subsistence farmers in both communities have come to accept as indispensable to their production success. The influence of roads on subsistence agricultural production is discussed in how roads influence farmers' access to these farm inputs for production purposes and benefits. Let me clarify that farmers categorization of roads is very different from planners categorization of roads. To the rural subsistence farmer roads are either good or bad. Bad roads are mostly untarred and good roads are tarred.

At this juncture I must remind readers that, the demand – supply relation between Yong, Moglaa and Savelugu is satisfied. In that almost all the purchased inputs of agricultural production demanded by farmers are supply by Savelugu. There is no intervening opportunity. That is there is no other town that performs or can perform the supply functions of Savelugu. Farmers in Yong get all their purchased inputs mostly from Savelugu and farmers in Moglaa also get all their purchased inputs mostly from Savelugu. What is now left is the issue of transferability, which is the profitability of farmers' interaction between their communities and Savelugu. In the rest of this chapter I discuss how roads as an allocative resource, influences farmers access to the factors of production (labour, tractor, plough machine, fertilizer, pesticides and weedicides) for production benefits. Land as a factor of production is ignored because as already stated agricultural lands are family or household lands which the whole family have access to.

5.3 Roads and access to purchased inputs

It is clear that the rains are the most important resources in subsistence agriculture and thus the rainy season signals the beginning of the planting season for subsistence agricultural farmers in the northern region of Ghana. A farmer said “*Without the rain we can do nothing*”. As already stated issues of subsistence agricultural production in both communities start with the preparation of the farm land (ploughing), through planting or sowing to harvesting. Harvesting

ends the production period for a subsistence farmer in northern Ghana. From the very first stage of production which is the ploughing or the preparation of the farm land the influence of modernization cannot not be underestimated neither can it be overestimated in subsistence agriculture. Subsistence farmers today attach greater importance to purchased farm inputs as a sure means to effective and efficient agricultural production. Against this, the plough machine popularly known as “tractor chee” in local parlance is the first purchased input that has become very important to subsistence production.

5.3.1 The Plough

Preparation of the farm lands for planting is very important since it is the first step for farmers. In both communities farmers must either plough to meet the first rain or plough just at the coming of the first rain to take advantage of the rain for maximum production. Apparently timing in preparing or ploughing the land is very crucial. If a farmer does not time his ploughing or preparation of land it can have serious effects on his production output for the year especially knowing that they only have one planting season which is determine by the rain. Farmers who use the plough machine usually would like to prepare their farm lands in wait for the first rain. To such farmers the first rain is a sign to sow or plant while farmers who do not use the plough machine especially those farmers who use their strength the first rain signifies a time for preparing their lands because the land become easy to plough. A farmer who uses the plough machine said “*See I prepared my farm land three weeks ago waiting for the first rain to start planting*”. A farmer who uses the hoe to plough told me: “*It rained yesterday that is why I am ploughing my land today. The ground is soft*”. This means using the plough allow a farmer to make the best of the rain.

To start my discussion I must state that, it is widely accepted among subsistence farmers in the north that, the plough machine is faster, safer, plough better and save a lot of time. The advantages of the plough machine are well established among farmers in both communities with and without roads. This may explain their rapid adoption in such subsistence communities. A farmer said “*It would have taken me, my family and friends some weeks to plough my land but the plough machine used a day to do that for us. It save us a lot of time especially nowadays that*

the rains are not coming as it used to be (erratic). If you do not use the plough you might miss the rains". A farmer I interviewed in the second week of June who had still not plough the farm land told me *"Yes I used the plough machine but this year I have not plough my land because I have now raised the money to rent the plough machine because it can plough large areas fast and save me energy and time"*. The importance of the plough is thus in no contention even those farmers who plough with the hoe and the animal accept the superiority of the plough over the hoe and wish they could afford the plough. One farmer who uses the hand and the hoe told me, *"My land is big but I cannot plough all using my hand and the hoe. If I do so I will miss the rainy season but I cannot afford the plough too"*. Furthermore a farmer said *"In this territory (savannah) we only have one rainy season. There is not enough rain nowadays so when rain fall and you are using the hoe and hand to farm (plough) it will waste your time. The plough makes it easy for you to cultivate"*. The erratic nature of the rains has made the plough machine more important than ever thus the ability of roads to influence access to it have also become more important than ever to subsistence agricultural production. I must state that roads do not necessarily affect the price or rent of a plough machine. Plough operators or owners in the district or town meet to fix the prices. How they determine prices farmers themselves do not know. There is a standard price for ploughing an acre of land in a particular planting season in the district. At the time of my field work the price for ploughing an acre of land was 35 Ghana Cedis.

Plate 4: Photo of a plough machine. Source: Author.



During an informal conversation with two plough machine operators I was told that they (owners or operators) meet and they consider issues like fuel prices when they are determining the price for ploughing an acre of land. Thus the price of renting a plough was the same for both farmers in both Yong and Moglaa. During the time of my field work all ploughs were rented or hired by farmers from Savelugu. No farmer had a plough and there was no community plough. It is not surprising that community ploughs and tractors are suggested by farmers in both communities as means of improving subsistence agriculture productivity in the communities.

Although the roads may not influence the price of renting or hiring a plough machine, it influence is felt in other ways. In both Yong and Moglaa farmers may pay or actually pay the same price (money amount) for renting a plough but farmers in Moglaa pay far more with their time. The untarred road serves as disincentive while the tarred road serves as an incentive to plough operators. Because all ploughs are accessed from Savelugu the road to and through the community is a paramount incentive to plough operators and other transport service providers. The tarred road reduces injury or damage to the plough and the untarred road increases risk of damage or injury to the plough. And so farmers in Moglaa have to wait for days some time as long as five days to get access to a plough. As one farmer in Moglaa explained, *“I waited five days to get a plough to plough my land. The plough operator had to wait to get many jobs in my community before he comes. He cannot come to plough my land alone and go and the next day my neighbor will also go and bring him. That will be too much damage to his plough because of our bad road. Sometimes you might even wait for weeks if people are not ploughing their lands in the time you want to plough your land. Sometimes if you are lucky and one person bring a plough into the community you beg the operator to plough your land for you because if he leaves it difficult to get another plough operator to come”*.

Fortunately or unfortunately for farmers in Yong the above experience is an experience that belongs to the immediate past. This is how a farmer shared his experience concerning access to plough for preparing the farm land. *“You know before when we did not have this road (tarred) I used to wait a long time to get a plough to plough my farm land from Savelugu. But because of the road plough operators are motivated or enthused to come here. Nowadays I do not even go*

to Savelugu to get a plough. When I have my money and I am ready to plough my land I just stand by the road side and I will see a plough machine pass by, I will negotiate with him to come to my farm after he is finished with the farmer who brought him and when he has no impending job I just take him to my farm". From this quotation it clear that tarred roads can really promote while untarred roads does hinder or deter subsistence agricultural production. While farmers in Moglaa spend weeks negotiating access to a plough to plough the land their neighbours with Yong spend few hours or minutes not to negotiate but really access the plough to the benefits of their agricultural production.

We are also reminded of the fact that, farmers in both communities have the same planting period which is determine by the same erratic rains as stipulated by farmers. To buttress the incident of erratic rains in the north, while in Accra the capital of Ghana there were news on television about some places in Accra which were flooded. I got to the north only to realize that they were still waiting for the rains to start planting. The idea here is that, because of the erratic nature of the rain quick, easy and timely access to a plough goes a long way to promote or boost production while delays and frustration in access to a plough can also go a long way to hinder subsistence production. The plough allow farmers to take advantage of the rain to maximize production.

What is worse than somebody determining when it appropriate for you to start your farming activities knowing you are limited by the rainy period. This is pure frustration and tends to hinder subsistence agricultural productivity in Moglaa. Farmers in Yong community because of the road have easier and timely access to ploughs thus they can plough their farm lands on time to make use of the rains to ensure effective and efficient subsistence production. It is already established that the road is a great incentive to plough operators because it reduces damage and time thus reducing cost of traveling. This has made it easy for farmers in Yong to access the plough fast and easier resulting in timely ploughing of their lands for planting and also taking advantage of the rain for maximum outputs.

It is interesting to know that due to the increasing importance of the plough machine to subsistence agricultural production, farmers in communities without road employs measures or

ways of coping or reducing the delay and the frustration in accessing the plough. This is particularly seen in social statuses and relations. Statuses and social relation goes a long way to facilitate farmers' access to plough machines. This is how a farmer in Moglaa shared his experience. He is a land lord and the youth leader of the Moglaa community. *"I asked a plough operator who is my friend, to come and plough my land. The plough machine broke down because of the bad road. He managed to fix it and came the next day to plough my land for me. I am telling you, he would not have come again if not because of our friendship and most of all his respect for me as the youth leader of the community"*.

This means that farmers in communities without roads can reduce waiting time in accessing a plough machine through social statuses and relations but even with social statuses and relations there is still delay and inconveniences. In the above experience the plough broke down on its way to the community and this probably might change a lot of activities either in the plans of the farmer or the plough operators. The argument is that, with such social relations the disadvantages that the bad road brings to farmers in Moglaa is greatly reduce. Thus, for farmers in communities without road to get easy and on time access to a plough, they must have some kind of social relation with the plough operator or a high status in the community to curtail the disincentive the untarred or bad road pose to plough operators. Other than that farmers will have to wait for weeks or days just to plough their farm lands and this can greatly deter or hinder productivity because they lose some days of the rainy period. The opposite is the case for farmers in communities with road. They can easily access the plough for agricultural production benefits and if they have strong social relations with the operator it even increase or enhancing their access to the plough machine.

5.3.2 Agro-chemicals

Farmers' access to agro-chemicals is not only dependent on good roads. It is also depends on adequate and effective transport services. Good roads must be accompanied by equally adequate and good transport services. I identified that this is not or has not be the case in northern Ghana and the rest of the country. In Ghana good roads does not automatically guarantee good transport services. Thus factors such as poor or bad roads and poor transport services are mentioned as

factors generally unfavorable to agriculture growth in the district. But the interviews revealed that, whilst subsistence farmers in Moglaa focused on poor road infrastructures and inadequate transport services as principal factors constraining access to agro-chemicals farmers in Yong focused on poor transport service as the principal factor constraining access to agro-chemicals. My argument is that access to agro-chemicals can still be hindered if good roads construction is not accompanied with adequate transport services.

The interviews indicated that, subsistence farmers are virtually relying on chemical fertilizers, weedicides and pesticides for high yield or huge harvest. Subsistence farmers in both communities claimed their farms lands are no more yielding substantial quantities of crops to feed their families and that chemical fertilizers are the best way to increase yield in this day and age. Some of the common use fertilizers among farmers are Nitrogen Potassium Phosphate (NPK 15 15 15) and Ammonia. Subsistence farmers also applied chemical weedicides to control weeds. There is also the use of pesticides, fungicides and insecticides to control crops pests and diseases. Agro-chemicals mainly fertilizers, weedicides, and pesticides form the bulk of purchased inputs in subsistence agriculture in the northern Ghana. Farmers increased emphasis on the importance of agro-chemicals to the production of crops only means that anything that hinder their accessibility tend to hider subsistence agricultural production. Reduced or low access to agro-chemicals may lead to crop failure or poor harvest. Anything that ensures access to agro-chemicals on the other promote subsistence agricultural production through high yields. Agro-chemicals have become so important to subsistence farmers that even farmers who claim the price of a plough machine is expensive and that they could not afford it used or applied agro-chemicals to their farms.

The price of a bag of fertilizer at the time of my field work was over 50 Ghana Cedis. This amount was twice as much as the amount for renting a plough machine as discuss above. Nonetheless farmers were ready to buy and apply it to their farms with the hope of a better yield. This included farmers who claimed they could not afford a plough machine. Farmers believe the land is no more fertile as it used to be thus for a good yield one must apply fertilizers and pesticides to control crop pest and diseases. A farmer said, *“Our lands are no more fertile and so if you do not use fertilizers you will not even produce enough crops to feed your family not to*

talk of harvesting some to sell to raise some money for your family". Subsistence farmers' reliance on agro-chemicals for high yields are also reflected in farmers continued emphasis on agro-chemicals subsidy by the government as ways or measures of improving agriculture in the region.

The means of road transport services available to subsistence farmers in Savelugu to access agro-chemicals includes the vehicle (minibus). It is the most popularly means of traveling in Ghana. There is also the motor king, and motor cycle. Interviews indicated that transport services to Moglaa and Yong as well as other rural communities in the district are generally poor and more so for Moglaa and the communities without road. Vehicular travel is virtually none existing in the district. In Moglaa the interview revealed that there were only two vehicles that run from Savelugu the district capital or the market town through Moglaa to Kumbungu. The first vehicle passes through the community in the morning and the second passes in the afternoon. There is no single vehicle meant to commute between Savelugu and Moglaa or Moglaa to Savelugu. Farmers in Moglaa can only join vehicles from Savelugu to Kumbungu which shortest route is to go through the bad or the untarred road of Moglaa and the other villages to reach Kumbungu. Farmers are charged for the full journey from Savelugu to Kumbungu. At the time of my field work the fare was 70 pesewas.

An informal conversation with leaders of the transport or vehicle station (popularly known as Bookmen) at Savelugu confirmed that there are only two vehicles from Savelugu to Kumbungu and Moglaa passengers uses those two cars as their only means of vehicular travels. By observation I realized that the first vehicle pass Moglaa community between the hours of 7:30am and 8:30am local time. The second passes between the hours of 2:30 pm and 3:30 pm. These times are subject to passenger availability at the vehicle station. A bookman told me *"Look at the time it pass 9am and the morning bus is still not full and the driver cannot move when it not full. There are not enough passengers and the driver cannot drive those few passengers. That will be a lost to the driver. A driver sitting by also said, "If it is not full after sometime the driver might decide to abandon that journey"*. The practice of waiting for vehicles to fill up before a journey can begin is a common practice in Ghana and most so in rural communities with few vehicles. Abandoning a journey for such reasons as low or less passengers is also common in Ghana. In

such instances passengers have no choice than to find their way home. On few occasions the vehicle station leaders make other arrangements for passengers to join another cars or vehicles.

Subsistence farmers of Yong and other communities with road are not much different in terms of the number of vehicles available to farmers for access agro-chemicals in Savelugu. The morning and late afternoon schedules of vehicles is the same for subsistence farmers in Yong. Farmers are also charged the full fare from Savelugu to Nanton. The fare was also 70 pesewas from Savelugu to Nanton at the time of my visit. The fact that both communities were paying the same fare irrespective of the road in Yong means they were all charged for the full journey. The vehicles primarily commute between district capitals. The leader of the bookmen told me: *“There are two vehicles from here (Savelugu) to Kumbungu and Moglaa passengers use those two vehicles. It is the same for Yong and other communities too”* In Yong there are also no direct vehicle movement between Savelugu and Yong or from Yong to Savelugu just like Moglaa. Passengers from Yong can join vehicles from Nanton to Savelugu and vice versa. This is primarily the vehicular option for subsistence farmer for accessing the needed agro-chemicals. Going by this option means that, for a farmer to access the needed agro- chemicals he or she must go to Savelugu in the morning and return late afternoon. Thus low or inadequate vehicular transport services is a great deterrent to subsistence agricultural production knowing that the subsistence farmer is limited by the duration of the rain. Farmers in Yong shared this horrible experience with farmers in Moglaa when there was no road in their community.

This is not to say that vehicular transport service in relation to the number and schedule of the minibuses is changed. No they still remain the same. Minibuses still maintain their morning and late afternoon schedules irrespective of the road in Yong. But the road gives farmers in Yong the advantage of another means of vehicular service which is the taxi. A farmer proudly said *“Before when we did not have this road it was difficult to get a taxi to come here. They will not come here at all even if they did not have anywhere to go but now they come here very frequently”*. Another farmer also said *“Ever since we had this road taxi drivers are more willing to come here”*. Thus the road has open up or increase the number of vehicular travel choices to farmers in Yong. Taxis do not have any tight schedules like the minibuses. They go when and where the passenger want them to go. Though taxi are more expensive than the minibuses they are go when the farmer wants them to go whether filled or not. Taxi reduces the waiting time, frustrations and

delays associated with the minibuses. Taxis allow farmers to access agro-chemicals when the farmer needs them thus promoting productivity in the Yong and other communities with road. Taxis in Yong are not as expensive as it was to be when there was no road because with road travel time is greatly reduced thus reducing the cost of taxis. Taxis as a means of transport did not appear in whatsoever form during interviews in Moglaa. Furthermore, the road in Yong has reduced the distance and therefore the time use in commuting between Yong and Savelugu. *“Going to Savelugu have become like moving from house to house. The road has also made it easier for us to easily use our bicycles and motor bicycles a lot”* a farmer told me.

Due to the inadequacy of the vehicular transport service to rural subsistence communities in Savelugu, the motor king has been introduced to fill the gap. The motor king popularly known among locals as “motor chee” is an intermediate means of transport (IMT) that is more affordable, numerous and easy to access compared to the taxi or the minibuses. It is a motor tricycle that is meant to help farmers’ access farm inputs and market their agricultural produce. The motor king is not meant to transport people. But because it is a very common it is normally use in transporting people in the district and the region.

Plate 5: Photos of minibus vehicles from Savelugu to Kunbumgu. Source: Author.



It is a frequent sight in Tamale and its environs to see people sitting on the edges of the motor king who are travelling from one place to the other. My interpreter told me “*It is a general knowledge that the motor king is for transporting commodities and all the people know it. There is even a decree in the hospitals that says people who suffer injuries from motor king accidents should not be treated*”. People are not treated from motor king accident or are treated at a higher cost because the motor king has no seats for passengers thus it is not safe for transporting people. It is only meant to transport goods. But the question I asked myself is how a farmer can ask a motor king driver to take his or her farm inputs home or the produce to the market while he or she remain or struggle to find another means of transport. This is not practicable so it common sight to see people sitting on top of goods like the boy in the picture below. This is very dangerous because such passengers can easily fall off on the road leading to serious injuries.

Plate 6: Photos of motor kings showing it intended and unintended purposes. Source: Author.



But farmers claimed they prefer it because it affordable and it always available compare to the vehicles. I observed that, the motor kings are numerous and one can easily hire one to either carry his or her agro-chemicals or for personal travel. The motor kings are also fast and go where vehicles do not go thus they bring farmers straight to their homes and pick their produce right from their houses. A service that the vehicle operators cannot provide and the taxi driver will provide at a very high cost. It is clear that, vehicular travel pattern do not suit farmers, it is also

inadequate and uneconomical. Subsistence farmers in both communities therefore rely on the motor king to access all their agricultural agro-chemicals from Savelugu. Notwithstanding getting access to a motor king by farmer to access agro-chemicals is also influence by roads. As farmers in Yong easily get access to motor kings because their road is an incentive to motor king drivers', farmers in Moglaa have to struggle or go through a long process of negotiation sometimes using their statuses, social relations and networks before a drivers agree to carry or transport them even at a higher price.

Subsistence production experience of farmers in Moglaa indicates the motor king as the best transport option when a farmer want to access agro-chemicals from Savelugu. As already stated the minibus option will mean going to Savelugu in the morning and returning late afternoon. This option means the farmer must spend a whole day in accessing a few bags of fertilizers or weedicides. This is the words of the chief of Moglaa *"From here to Savelugu is not far but look at the road. It make it look like it so far away"* Thus for a farmer to spend the whole day over 2-4 bags of agro-chemicals is a great setback to agricultural productivity. Taxis are expensive and taxi drivers are not willing to commute bad road for fear of damage to their cars. Thus taxis for instead was never mention among the transport means in Moglaa.

But the motor kings has no seats for passengers. They are for transporting such things as crops, fertilizers and goods in general. Using the motor king means farmers have to seat on the edges of the motor king and so with the bad road they are tossed to and fro, up and down the many pot holes. This also leaves farmers broken for a day or two thus a break or pause in agricultural production activities. This is the experience of a farmer in Moglaa, *"Any time I travel on this road I am in constant fear of accident. The motor king will be tossing us here and there. Especially on the motor king if you do not hold on very tight you will be thrown overboard. By the time I get home I am very tired and so I cannot continue to the farm even though sometimes I might return from Savelugu early"*.

This is also the immediate pass experience of farmers in Yong. They use to have the same experience some two or three years ago when they were also without road. A farmer said, *"When we did not have this road we use to suffer a lot. Sometimes you see motor kings with some loads*

in it stack in the mud and they will spend a long time to release it. Because of this drivers did not like to come here at all". But now even taxis come here frequently so you can buy your fertilizers from Savelugu and bring it quick". We are once again reminded that subsistence agricultural production is rain fed and occurs during the raining season. The rainy season in Ghana and most Africa is not a time to have an untarred road or bad roads. Untarred roads during the raining season are virtually not motorable and hinders agricultural productivity. Thus rural subsistence communities with roads like Yong are the most likely to easily access these agro-chemicals and also at a low cost for the benefits of their agricultural production. It must be said that farmers in communities without road also capitalized on their social relation to reduce the disadvantages of the road in accessing agro-chemicals. Social relations with any driver can reduced the monetary and time cost of transportation allowing farmers to access the needed agro-chemicals.

The same experience was experience among subsistence farmers in Yong when they did not have the road but now the opposite is the case. Farmers in Yong do easily access the needed agro-chemicals for the benefits of their production. The road is an incentive to transport service operators or drivers and so they are enthused or motivated to commute their communities. Because of the road the community also has more transport choices. Framers in Yong have access to the mini buses, taxi and motor kings. Because of this transport services subsistence farmers in Yong community can and do easily access these agro-chemicals especially fertilizers to promote their agricultural productivity. Yong farmers says going to Savelugu have become like moving from house to house because of the road. They can easily access the needed agro-chemicals to enhance agricultural production in their community.

Finally there is the option of personal motors for accessing agro-chemicals. From the methodological chapter it is realized that citizens of northern region cannot survive without their motors cycles due to the virtual none existence of vehicles. Motors are expensive and are few among subsistence farmers. Subsistence farmers in both communities with motor cycle can easily and timely access agro-chemical but the quantity of for instance of fertilizer the motor cycle can carry is very low compare to the motor king or taxi. Even with the motor cycle farmers

in Yong benefits a lot because Savelugu is now like house to house thus a farmer can easily go to Savelugu as many times to access agro-chemical. Farmers in Yong will also suffer less damage to their motors thus expanding the life and their investment and reducing cost of repairs. The bad road increases damage to motors, reduces its life span and increases farmers' cost of production through repairs. Whether a farmer uses the motor king or the motor cycles the farmer in Yong is the most likely to access agro-chemical easily and at lower transport cost to enhance agriculture productivity.

To conclude I say there is a big gap in the transport service between subsistence communities with road and communities without road. Rural subsistence communities with road like Yong are always better off than the communities without road like Moglala in relation to agro-chemical accessibility. A summary of the experience of subsistence farmers in Moglala indicates that, rural communities without are at greater disadvantage in transport services supply which hinders their access to agro-chemicals. It is not surprising Porter (2002) indicated that, to live in a rural community without road is to be invisible because such rural dwellers have to overcome additional difficulties in order to access anything.

5.3.3 Agricultural extension agents

According to the concept of regionalization the success of subsistence agriculture is dependent on others. Extension remains very integral to the success of subsistence production in Ghana. Much of what subsistence farmers in both communities know about current or modern agricultural innovations, technologies and methods depended on their contact with agricultural extension agents or officers. Agricultural extension agents do not fall under farm purchased inputs because farmers do not pay for their services. But the growing importance of purchased inputs (especially agro-chemicals) in subsistence agriculture has resulted in the growing importance of agricultural extension agents to the production success of subsistence farmers. Extension agents are government trained personnel who go to rural communities and farmers to advise them on the latest agricultural technology and how to apply them.

From the interviews most of the agricultural knowledge of rural farmers concerning current agricultural innovation, methods and how to apply them for the benefits of production came from the extension agents. Concerning government extension agents a farmer said, *“We do receive extension agents. When they come they sometime call for all of us to meet and listen to them. Sometimes they visit us on the farms to help us”*. This role of extension agents to the development of agriculture in Africa was also noticed by Doss and Morris (2001: 37) thus they reiterates that *“the uptake of new technology is often influence by farmers contact with extension services, since extension agents provide improved inputs and technological advice”*. In this light, subsistence farmers who get contact or access to extension agents are those farmers who can benefits from their advice and inputs hence anything that give subsistence farmers easier and constant access one way or the other also improve agricultural productivity.

The experiences of four farmers, two from Moglaa shows that road access play a crucial role in rural farmers' access to extension agents. *“I do receive extension agents”*. *“They do come but not frequently because of the bad road. They fear for their lives, they are also humans”*. *“Extension agents do come but because of the bad road they bring the young ones (newly recruited or trained) to us. The old ones (experienced) do not want come here”*. In Ghana extension agents have their own means of transportation yet the untarred roads limit their services mostly to the community with road. It must be understood that the planting season is the period where farmers need the services of extension agents the most but it is around this same time period that untarred roads become less motorable. Comparing the experience of subsistence farmers in Moglaa to farmers in Yong, it proves that farmers in Yong suffered the same limited services from extension agents when they did not have the road. Below are the statements of two farmers from Yong concerning access to agricultural extension agents. *“Nowadays extension agents come more frequently. Extension agents are coming to us frequently than before”*.

Limited access to extension agents means limited agricultural information or inputs from extension agents. If farmers have limited information concerning purchased inputs like government approved fertilizers, weedicides and pesticides the long run effects is that they either buy the wrong ones or apply it wrongly which can have disastrous effects on productivity. Farmers only have one planting season so any disastrous effect on production could lead to food

insufficiency or hunger. This is extension information have become very relevant to the production of subsistence agriculture. The interview further revealed that, the most experienced agents who are more familiar or knowledgeable about subsistence agricultural activities do not want to go to Moglaa because of the bad road. The situation greatly deter subsistence agriculture productivity in that the rich knowledge of the extension agents is lost to other subsistence communities with road like Yong. Thus communities with road access like Yong are the communities that benefit most from the agricultural innovations and advices of extension agents and to great extents the advices of the most experienced agents. Application of such extension knowledge can enhances their productivity in such communities.

5.3.4 Farm Labour

Another area of rural subsistence agricultural production where the effects of road access cannot be neglect is the area of labour accessibility. Let me clarify that, in Ghana and most rural Africa because life is usually social or communal farmers help one another to clear or sow their fields. This a normal agricultural activity. It is basically built on social relations and reciprocity. For that matter social statuses and relations remain the most important determinants in accessing farm or agricultural labour. This is because subsistence agricultural is a social or customary activity under the control of the head of the family or house hold. The head of the family can summoned all the family members to go the farm if he or she needs them to. From the interviews this practice was common to both Yong and Moglaa. My experience with my interpreter also illustrates this practice among all Dangombas. One fine morning I was getting ready for the field and suddenly my interpreter called and said “*We have to go a bit late today because my father has asked all children to be on his field today to sow the filled and we all have to go*”. Also the Youth leader in Moglaa told me, “*Because of my position as the youth leader I gather young men and women to work on my farm sometime when I need extra hands on my farm*”. In the paragraph below we shall also see that it is a common practice for farmers to ask neighbours and friends to assist them on their farms in both communities.

Nonetheless the experiences of subsistence farmers in both communities prove that, even access to family labour which at first glance seems easily and readily accessible tends to be enhanced or

improved by road access. The most dominant means of transportation among subsistence farmers for daily farm activities is the bicycle. This is the experience of farmer in Yong “*I rode my bicycle to the farm when we did not have this road. I once asked a friend to come and help me but he refuse because of the bad road. Now I still ride my bicycle but I get to my farm fast and less tired because the road is smooth. Now I carry one person on my bicycle to my farm*”. “*Now that we have roads you can even carry all family easily to the farm*”. The benefits of the road here is that it save time and energy allowing farmers to work more on their farms. Secondly it increases the number of labour and the ease with which a farmer can transport farm labour for effective and efficient work. This was not always the case in Yong as the experience according to the quotation above. In the absence of the road access two year ago his friends deny helping him. While subsistence farmers in Moglaa continue to depend upon their statuses and social relation to access labour farmers in Yong have the extra advantage of the road. And so a landlord in Yong can access the family labour less tired for production purposes compared to a landlord in Moglaa.

As already stated harvesting ends the production activities but getting labour for harvesting is similar to getting labour for all farm production activities as discuss above. Hiring a tractor or vehicle to transport farm produce from the farm to the house and to the market is also similar to getting a plough machine/vehicle to plough the farm/transport agro-chemicals to the farm. Thus subsistence farmers in Yong with road tend to have quick and easy access to tractors and motor kings for the purpose of crop harvest.

5.4 Results of the Road Access in Yong

As a result of the easy and lower cost of accessing the factors of production which allow farmers in Yong to take advantage of the rain agriculture in Yong is greatly improved. This is the statement of two subsistence farmers from Yong. “*Because of this road we are far ahead of Moglaa when it comes to our agriculture*” “*Roads have elephant effects on agriculture production*”. Farmers in Yong think their agricultural production is now ahead of farmers in Moglaa because of the road because of the huge (elephant) advantage of the road. The end result of the advantage of the road in Yong is seen their farm expansion and time management and

finally the health of farms and farmers. Below I discuss the end results of the road access in Yong.

5.4.1 Farm Expansion

To quite an extent the most standard result or lesson that run through the interview is the expansion and the continuing process of farm expansion in Yong. It was clearly demonstrated by farmers in Yong that, as a result of the road they are now expanding their farm sizes. Subsistence farmers claim they will continue to increase their farm sizes in the future. Farmers are enthused about expanding their farm sizes to produce more for themselves. Subsistence farmers in Yong attribute the recent expansion of farm sizes to the advantages the road bring to their community. Here I do not argue the road as the reason for subsistence agricultural production. My argument is that, the road has provided unprecedented access to the factors of production for the benefits of subsistence agricultural production. It has also made their marketing safe, easier and much profitable compared to two years ago or to Moglaa as we shall see in the next chapter. This has made it easier for farmers to increase their farms sizes to produce more. The need to feed the family underpin farm expansion because in Moglaa where there is no road some farmers were expanding their farms during the time of my field work to help them meet the family's growing need for food.

Interviews showed that after the completion of the road farmers in Yong have added from two to four acres to their old or former farm sizes. Some farmers have double their farm sizes because of the road. A farmer said *"I used to farm four acres but now I farm eight acres. I added four acres to my old farm."* Subsistence farmers in Yong are expanding their farms because they now have easy and fast access to the factors of production. Their access to the factors of subsistence agricultural production is not only fast and easy it also comes at a much lower cost compare to farmers in Moglaa. Production cost is reduced through low transport cost so farmers in Yong are able to expand their farms to further promote productivity and profitability.

In Moglaa without road interviews revealed that farmers were not enthused with the idea of farm expansion because of the bad road. Farmers claim the untarred road hinders their desire to

expand their farms as the current farm size is able to sustain them. Thus farmers felt farm expansion in light of the bad road is a risk best left to only the “brave hearts” in the community especially when a farmer can meet the consumption need of the family. This is the experience of a farmer in Moglaa “*The bad road have many dangerous effect on agriculture. Oh I will not expand my farm land. Even the small one I have it difficult to a get a tractor to bring my crops home after harvesting. I have to carry them myself to the house. If I increase my farm how can I do that? A tarred road will boost my desire to increase my farm because I will have so easy and fast access to all the agricultural tools I need*”. This illustrate that farmers in communities with road like Yong are those who are more likely to expand their farms as a result of the advantages the road brings them. On the other one hand farmers in Moglaa are not motivated to increase their farm lands even when they have the land as result of the bad road. The bad road to them is disincentive to agricultural productivity and profitability thus farm expansion is seen as a serious risk taking whilst in Yong farm expansion is been embraced because farm expansion is envisioned as more productivity (food security).

At this juncture I must mention that, farmers claim the prices of purchased inputs are high. A farmer told me: “*If you sell one bag of maize you ca not buy one bag of fertilizer*”. And so among the many ways farmers suggest can improve subsistence agriculture in both communities are government subsidies on purchased inputs. Thus if anything come to add to the already high prices of purchased inputs or hinders their easy, fast and timely access such a thing will in the long run hinder subsistence agriculture productivity and profitability. This is exactly what untarred or bad roads do, they add to the price and hinder access to purchased inputs. My argument is that, in a community like Moglaa which is without road the prices of the purchased inputs like fertilizers is increased because of higher transport cost in accessing them. The bad or untarred road do not only increase the transport cost in monetary terms but also increase it in time. The frustration and delays a farmer in Moglaa go through in order to access a plough indicate how untarred roads hinder subsistence agriculture in the community. The opening sentence of this paragraph elucidate farmers’ dissatisfaction with the prices of purchased inputs and so with roads ability to decrease or maintain production cost and also provide easy, fast and timely access ensures productivity and profitability. Rodrigue et al., (2009; Merlin, 1992) said transportation must always trade space for time and thus money. This is exactly what is been

experience by subsistence farmers in Yong community, they now trade space for time and money because of the road thus promoting subsistence productivity and profitability.

5.4.2 Time Management

Furthermore, the interviews indicated better farm time management as one of the key issues in Yong after the road construction. I noticed in both communities subsistence that farmers are seriously racing against time in their agricultural activities. When to plough, when to sow, when to go to the farm and when to return home are agricultural activities well planned or timed by subsistence farmers in order to promote productivity. The rain indicates the beginning of another planting season but farmers must consciously plan against the coming of the first rain in the rainy season. If a farmer fails in timing the rain he or she could incur serious losses that year. For instance the farmer who ploughed his farm land three weeks ago in anticipation that the rain would come earlier had to incur additional cost. Because after three weeks weeds have started growing on the field and the weeds must be cleared at an additional time and cost before he can sow. In like manner farmers who plough with the hoe must make sure they acquire the necessary labour to plough the lands in the shortest possible time in order not to miss the rains especially now that the rains are erratic.

Let consider the following scenarios a farmer who uses five days to negotiate access to a plough and a farmer who uses hour to access the same plough yet both are to produce within the same time frame. Again a farmer who spend less travel time to access agricultural inputs and a farmer who spend much travel time to access the same inputs. Who can effectively make use of the time frame allocated for production? Furthermore the farmer who go to the farmer less tired and have access to more labour and the farmer who goes to the farm with less labour and more tired who is more likely to be effective given the same time frame for production. This is the contradictory story between subsistence farmers in Yong and Moglaa. Subsistence farmers in Yong use minutes to access the plough, less time to travel to access agricultural inputs and get to the farm less tired thus are able to time and plan their activities to promote productivity and profitability whilst farmers in Moglaa use longer periods to access the needed inputs and at higher cost hindering the productivity of subsistence agricultural in the community.

In daily farm management activities of sowing, weed and disease control and fertilizer application I noticed farmers do not just wake up and head for the farm because it what they do to survive. Subsistence farmers are time conscious and much aware of their environment thus they have developed a time schedule for farming on daily basis (See page 66.....). This time schedule is seriously hindered in Moglaa especially when it comes to buying agro-chemicals and applying them to the field. I observe in the both communities that a farmer can go to Savelugu and return to the farm to continue his or her farming activities once the transport means is available. But because transport means radiate towards Yong farmers in Yong are the most likely to manage their time on the farm. A farmer in Moglaa must use the whole day or hours and sometimes days to access purchased inputs making time management an issue among farmers in Moglaa.

5.4.3 Healthy farms and farmers

Going to the farm less tired and with more hands, getting access to inputs on time and safely applying agro-chemicals accordingly ensure farmers safety and health. The argument is that, farmers in Yong are also the most likely to produce healthy farms and farmers. This is because farmers in Yong go to Savelugu within the shortest possible time compare to farmers in Moglaa. A farmer from Moglaa told me: *“Any time I travel on this bad I fear for my life. The motor king will be tossing you here and there. Anytime I travel to Savelugu my body can pain me so I can go back to the farm”*. This means farmers in Moglaa have to break for a day or two because of the pains acquired during traveling on the bad road to Savelugu. Farmers in Yong are also the ones who get access to extension agent frequently and more regularly.

The end result is that they get more information on agricultural innovation and information which they can easily apply to their farms to promote productivity. Subsistence farmers in Yong also get the most experienced and familiar extension agents which make it much easy to accept and apply the information communicated to them by the extension agents. Subsistence farmers in Moglaa do not get extension agents on regular basis and when they come they are the newly recruited one which farmers may not be familiar with. Apart from the fact that farmers in Moglaa

have reduced access to agricultural information and how to apply them they also have to deal with newly recruited agents who are not familiar and do not have the experience. Agricultural extension agents do not only communicate agricultural innovations and information they also illustrated to farmers how to apply or employ them. In this regards farmers in Yong who have regular and frequent access to them are the ones who are more likely to apply such innovations correctly to ensure healthy farms and farmers.

Before I put my discussion together in a conclusion it is necessary to also highlight some of the discomforts subsistence farmers shared in Yong as a result of the road construction. The interviews indicates that, some subsistence farmers in Yong especially those who have their farms closest to the road suffered and continue to suffer as a result of the road construction. A farmer told me that: *“During the road construction some part of my farm was used as places for road materials like sand and gravels. Some of these materials still remain on my farm.* The long run benefits of roads are undoubtedly great. It has given farmers access to the needed farm inputs at a much lower cost compared to when there was no road. But we should not lose sight of some of the negative effects of roads on subsistence agriculture too. From the above those subsistence farmers whose farms are closest to the road though they might benefits the most, they also suffer the most. The deposit of road materials on their farms reduced their farm sizes and could also cause serious pollution on the farm affecting the health and number of hours a farmer can work on the field. It may be reduce soil quality.

5.5 Conclusion

In conclusion it is clear that the influence of road access for subsistence agricultural production cannot be over emphasized one the less roads are not the most important resource to subsistence agriculture. The rains is the most important resource to subsistence agriculture. Road access is important in subsistence production because of the modern or purchased farm inputs which are access from market towns. Therefore subsistence farmers with roads have timely and easier access thus enhancing their productivity. Subsistence farmers agreed subsistence agriculture in communities with road is greatly improved by the road. In other words the road is enhancing the assimilation and use of the modern methods thus promoting subsistence agricultural production.

Road access help subsistence farmers take advantage of the rains to promote subsistence agriculture productivity. From the very beginning of production which is the preparation of land to the harvest period the effects of roads are felt. Rural subsistence communities with roads like Yong are the most likely to prepare their lands on time, easily access agro-chemicals and extension agents. Since production output is determine by the duration of the rain farmers in communities with roads are the ones who are likely to take advantage of the rain for maximum output. Farmers in communities without roads go through lot of difficulties in accessing purchased inputs because of the bad road which is even less motorable in the planting season where the rains are at their peak in Ghana thus hindering farmers' access to the needed farm inputs. None the less farmers in communities without roads rely on their social relations to help curb the disadvantages of the untarred roads. Road access might not influence the types of crops produced, none the less road access influences subsistence agricultural production by allowing easy and timely access to purchased inputs, labour and extension agents which allow farmers to make the best of the rainy seaso to promote subsistence agricultural production through farm expansion, healthy farmers and farmers and farm time management.

CHAPTER SIX

THE INFLUENCE OF ROAD ACCESS ON THE MARKETING OF SUBSISTENCE AGRICULTURAL PRODUCE

“Good roads influences agricultural a lot. It raises the image of subsistence agriculture. When you produce traders are willing to come and then buy. It makes the marketing of produce so easy and fast” (Interview, 2013).

6.1 Introduction

This chapter addresses research question two. Thus I discuss the influence of road access on the marketing of subsistence agricultural produce. In the previous chapter I compared the production experiences of subsistence farmers from Moglaa without road to Yong with road to highlight how road access influences subsistence agricultural production. In like manner, I will compare the marketing experiences of farmers from both communities to highlight how road access influences the marketing of subsistence agricultural produce. I will also discuss in like manner the influence of modernization on subsistence agricultural marketing. Finally I will indicate how statuses, roles and norms influence the marketing of subsistence agricultural produce in the northern Ghana.

6.2 Issues of Subsistence Agricultural Marketing

I stated in Chapter Five that, the primary focus of subsistence agricultural production has not changed in both communities irrespective of the road in Yong. Subsistence agricultural farmers in both communities still maintain their unique identity as producers of staple crops primarily for family consumption. This means marketing or selling crops for economic gains or profits still come second to feeding the family for farmers in both communities. The road as already stated has not made farmers in Yong any more economically oriented in their production activity. My argument is that the road has granted subsistence farmers in Yong unprecedented access to the factors of agricultural production which have enhance their production activity and as we saw have resulted in farm expansion.

But this must not be misunderstood for a sign that means farmers in Yong have become more economically oriented. From the interviews more production means a farmer's ability to feed the family better and to a greater extent the environment (the community). I noticed from the interviews that, while some farmers said they produce to feed the family other said they produce to feed the environment. It is possible to assume that the environment is use in place of the family. This is not exactly the case as subsistence farmers in northern subsistence communities actually produce to feed the environment or the community in general. This mentality found expression in the idea of honour or worth among Dagombas. It is a disgrace if a land lord or the head of the household cannot feed the family or if he or she has to continually buy from the market staples crops to feed the family. The idea of producing to feed the community shall be discussed under the type or categories of subsistence agricultural marketing. But generally speaking subsistence farmers in the northern Ghana produce to feed the family and the community, they do not really care about the prices of the crops they produce. They continue to produce their staple crops irrespective of the market price because the family remains their focus. This is how a farmer in Yong put it *"I am a Dagomba and as my fathers' produce to feed me, we are taught to concentrate on producing to feed the family. If you consider prices of the crops then you might never produce and your family will go hungry"*. The above quotation means that farmers first priority remain production to feed their family and thus they do not care much about the prices of commodities or which commodity is selling at high prices.

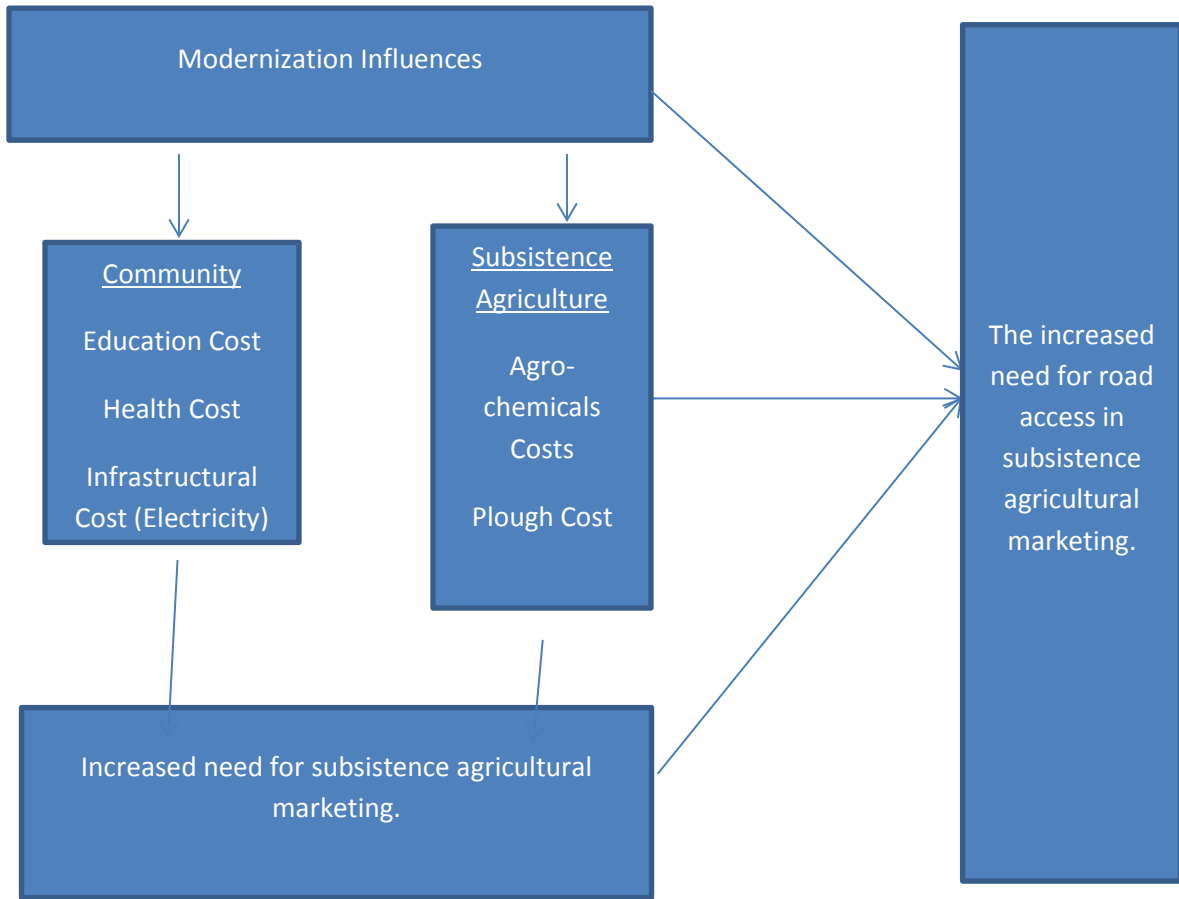
6.3 The Influence of Modernization on Subsistence Agriculture

Although marketing or selling still remain a secondary activity for subsistence farmers in both communities it is interesting to know that the influence modernization has resulted in the increased need for the marketing of subsistence produce. The influence of modernization has resulted in an increased life and production costs. Purchased inputs are expensive and thus it generally increases production cost for farmers. The influence of modernization is also seen or felt in the whole subsistence community. I observed that both communities have primary school and electricity. Moglaa have a community clinic but both community access the district hospital. The influence of modernization on the community is seen in education, health and electricity which generally increase the cost of living for subsistence farmers.

Due to the increasing production and life cost subsistence farmers in both communities are modifying or have modified their marketing practices. This modification is to help farmers meet their life and production costs. It is conventional wisdom that subsistence farmers sell only in cases of surpluses but from the interviews I noticed that farmers in both communities have categorized staples base on the staple's importance to the survival of the family or household. In other words what staple crop is more important to the survival of the house hold and what is not? Some staples are considered more important to the survival of the household than other staples though they are all staple crops of the communities. The argument here is that, some crops though staple are produce with the market in mind to help raise the needed money to meet life and production costs. Such staple crops are always sold whether there is surplus or not as a way to raise money to meet their life and production costs.

Groundnut (use mostly in preparing soups and sauces in northern Ghana) is one of such crops which is cultivated by subsistence farmers for both consumption and market purposes. But the market purpose of groundnut outweighs the consumption purpose thus it is the commonest staples farmers in both communities readily sell. As a farmer told me "*We (community) cultivate maize to feed the family and groundnut to sell*". From the above quotation we realized that, maize on the hand is a staple that farmers produce to primarily feed their families. As stated in chapter four, northern communities eat a lot maize food. Maize is therefore ranked the most important staple that a farmer can cultivate and so maize is always cultivated for the family's consumption. Maize as a staple is one of those crops that can only go to the market in the presence of surplus or in cases of extreme need. This is not applicable to all staple crops cultivated by a subsistence farmer. A farmer boldly said, "*I do not go to the market to sell my maize, I only sold one bag of maize some days ago to raise money for my daughters who was very sick and I needed to take her to the hospital*". This illustrates the importance subsistence farmers in the northern Ghana attach to maize for the family survival and therefore cannot be sold like groundnuts. Producing groundnuts to sell according to the interviews is to raise money to meet farmers' daily life and production expenses.

Figure 2: A framework showing the influences of modernization on subsistence communities and agriculture and the need for road access. Source: Author own construct base on field interviews, 2013.



The above frame work explains that, the use of modern or purchased inputs have generally increase subsistence production cost. In Chapter Five I stated that because of the expensive nature of purchased inputs farmers consistently asked for government subsidies on them. I also indicated in the same chapter, some farmers’ willingness and readiness to use the plough machine but could not because of their prices. The argument is that, the use of purchased inputs have generally increased or is increasing production cost. In like manner school fees, hospital bills and electricity bills have also increase life expenses in rural subsistence communities. Thus there is the need to market subsistence agriculture produce which have led to the need for roads to make the marketing of subsistence produce more profitable.

But marketing of subsistence agricultural produce in the northern Ghana is a very complex phenomenon which is very different from the marketing visible in most of the agricultural literatures. Common to most of the agricultural marketing literature is the idea that with road access rural farmers can access larger market towns for more profit but this is not exactly the case in the northern Ghana. In the northern Ghana subsistence farmers have two marketing categories or types. The first marketing category or type is part of the subsistence production culture of producing to feed the family and the environment. This category of marketing has to do with the first definition of marketing which the meeting of people to satisfy a need (See Chapter Two). The second is marketing with traders either in the community or in the market town. The influence of road access on the marketing of subsistence agricultural produce is visible with the second marketing category because it involves farmers either going (transport) to sell to traders in Savelugu or traders coming to buy from farmers in the community (See Chapter Two).

6.4 Marketing in the community

I identified from the interviews that subsistence farmers prefer to sell to and among themselves. Marketing in the community basically involve farmers selling to and among themselves. It is the safest and most important means to trade subsistence agricultural produce according to the interviews. Selling to and among themselves is not for economic gain, it is part of the subsistence production culture in the northern region. Thus it is a social responsibility or a moral obligation on the part of farmers in both communities to sell to their neighbours in need of the commodity satisfying the production reason of feeding the environment. From the interviews I noticed farmers produce to feed the environment or the community too. It is easier for one to assume that the environment use by farmers refer to their families or households. It is only at the marketing of crops do one begin to appreciate that indeed subsistence farmers in northern region produce to feed the community in general and not just their families. Because of the idea of producing not just to feed the family but also the community subsistence farmers in both communities prefer first to sell to and among themselves although they know they will fetch better or higher prices from the market or traders.

These are the quotation of two farmers from both communities in regards to why subsistence farmers in northern region prefer to sell to each other or among themselves. *“Yes it is true if you go to the market you will get higher prices but what is the important of going to the market when your neighbour needs the food to feed the family”*. *“You see it may be that a neighbour will have a bad harvest this year and if you do not sell it to him and you go to the market to get higher prices nobody will also sell to you when you also have a bad harvest. You will be told to go the market and it is expensive to buy food from the market”*. The first quotation illustrate that subsistence farmers are well aware that when they sell their produce to traders either in the community or in the market they always fetch better prices but because feeding the environment is also part of their production culture they prefer to sell in the community to neighbours. This is a practice in both Yong and Moglaa. The second quotation reveals something more about why subsistence farmers in the northern region prefer to sell among themselves. It indicates that, selling to and among themselves is an adaptive strategy or an insurance against future poor harvest or food insufficiency.

At this level of marketing it all about allocative (rain) and authoritative resources of social norms. Selling among themselves demonstrated to the greatest degree the dependency of subsistence agriculture on rains. The rain as already stated is the most important resource but out of human control. The rain can fail anybody in any season. This misfortune can befall any farmer at any time so it is only in the interest of farmers to sell to and among themselves to ensure their sustenance now and in the future. My argument is that because the rain determines production output for subsistence agriculture yet it is out of the control of the farmer then the rain can fail any farmer in any season. And so it better to sell to your neighbour in good harvest so you can also get food supply in bad harvest. Issues of honour is implicit in this level of marketing. When farmers sell among and to themselves they help each other fulfil their role or duty of feeding the family and thus help maintain their neighbours and the community’s honour. At this level of marketing the influence of roads are virtually none existing.

6.5 Marketing with Traders

This category or type of marketing is where road access become very necessary or important. Marketing to traders in the market place or traders coming to the community to buy from farmers

involves transportation. This type of marketing becomes an option for farmers when no neighbour has shown interest in their produce. This is the statement of a farmer: “*When I want to sell I first look in the community if no one needs it I take it to the market*”. Unfortunately it is this category of agricultural marketing that remain the focus of governments and planners. But this type of marketing does not mean much to the subsistence farmer because subsistence farmers think about their sustenance and honour as more important than their economic profit. Stated in Chapter Five is the fact that roads does not guarantee transport services in Ghana. And so the motor king (IMT) just as it happen to be the best transport means for subsistence production, it is also the best transport means for the marketing of subsistence produce. At this juncture attention must be drawn to the fact that the number of vehicles and motor kings commuting between Savelugu the market town and the rural communities do increase during market days. According to the bookmen “*The number of vehicles does increase on market days*. The interview with farmers also indicated that the number of vehicles and motor kings increases on market days but are still not sufficient as a farmer said: “*I have to do my transaction quickly and come home early because on market days if you do not finish early you may not get car or motor king to bring you home*”.

The market day in Savelugu is one of the biggest market day in the region and especially in the district. The market in Savelugu peaks between the hours of 1:00pm and 3: 00pm according to the interviews. This way of marketing is in sharp contrast with the way of marketing in most southern Ghana where rural farmers have to meet traders in the morning. This way of marketing comes with its own advantages and disadvantages. The advantage is that there is a high possibility for farmers from the rural subsistence communities to meet buyers in the market if they want to go to the market. That is farmers are not under much pressure to come very early in the morning like most part of the south where rural subsistence farmers always have to meet buyers in the morning (See Clarks, 199, Porter, 2002). The disadvantage is that passengers pay higher fees especially in the evening when there is limited transport. Transport cost rise as much as double the original price in the evenings when service demands exceed supply in Ghana.

At this juncture I must also clarify that not all subsistence farmers are frequent at marketing of their agricultural produce. I noticed from interviews that, the selling of subsistence produce in the market or to traders is more pronounce among the nuclear land lords or the younger

generation than the extended land lords who are mostly older. The focus of the extended land lords is much in the direction of feeding the family which is also in line with the idea of honour in the communities. The idea of honour is more pronounced among the old generation than the young generation. An old or extended land lord said *“I do not go to the market, it a shame for me I must concentrate on the family”*. Why trading in subsistence produce is more pronounced among the nuclear land lord (young generation) could be explained in terms of ideas of family provision. In that the younger land lords are the ones who mostly have their children in schools thus they are the likeliest to have cost associated with education. They are also the ones who like to have the modern equipment’s like television which also increases their electricity cost. . One young farmer said, *“Sometimes I want to go to Brong Ahafo to sell my produce there if I hear my produce is selling at better prices there”*. Brong Ahafo is region which is closest to northern region and has larger markets than the northern region. This illustrates that marketing for profit is more pronounced among nuclear (younger) subsistence farmers (See Chapter Four).

When a farmer is selling to a trader either in the community or in the market the first important thing is that roads are or have become a bargaining medium. Roads have become a very strong means of bargaining in relation to selling or buying of agricultural produce. Both farmers and traders use road access either to maximize and minimize prices of crops or produce. For this reason a farmer’s decision to go to the market or to sell in the community is highly influenced by roads. Likewise a trader’s decision to buy from farmers in the community is thus also influenced by roads. According to the interviews, in both communities’ subsistence farmers are aware of the fact that going to the market will always fetch them higher or better prices than selling at the community to traders. But the ease with which farmers can reach the market is very different from community to community. In other words the profitability (time, monetary and risk) of traveling to the market is very much, the concern of farmers. The traders on the other hand also consider the profitability of their journey to communities before going.

Let me also say that subsistence agricultural commodities produce in both communities have ready market in the market town. It is already established in Chapter Two that there is no intervening opportunity because no community provides the market services that the market town Savelugu provides. Subsistence farmers in both communities mostly trade at Savelugu or

buyers come mostly from Savelugu to buy from farmers. In both Yong and Moglaa farmers always wish they sell their produce in Savelugu to get higher prices especially for farmers in Moglaa. The quotation in the previous page suggest that some farmers even wish sometimes to go pass their immediate Savelugu markets to other markets where they can obtain the best market price for their produce

In Moglaa the community without road I noticed from the interviews that farmers wish they always go to the market to sell their produce for better prices. Unfortunately the untarred road which they commonly refer to as bad road makes their wish of always selling in the market difficult and frustrating especially when there is no neighbour to sell to. Farmers told me traders also face the same frustration when they wish or want to come to the community to buy from them. The end result is that subsistence farmers in Moglaa go to market in relation to quantity. That is, because of the bad road farmers in communities without road mostly goes the market especially when they have much or larger quantity to sell. With much quantity a farmer is ready to take or endure the risk of traveling on the bad road and the troubles of acquiring a motor king at a higher fee knowing a higher profit awaits him on the market. As already established roads are now a medium of bargain. Farmers use the bad road to bargain for higher prices when they manage to go the market whilst traders also use the bad road to bargain for low prices in the community because of higher transport cost associated with traveling on the bad road. A farmer told me *“When the traders come here they buy at lower prices. They will say things like look at your road. The vehicle is expensive because of the bad road. I might even not be able to get all these grains home to sell. I might lose some on the road due to the tossing of the motor king. So they (traders) will not buy at the market price. In like manner if you also get your produce to the market safely you also use the bad road to get the best price”*.

This quotation illustrates the many hurdles subsistence farmers in Moglaa and communities without road have to overcome to market their agricultural produce. I must state that traveling to the market town (Savelugu) to get higher prices for commodities is a very daunting task for farmers in Moglaa. The first hurdle is getting access to a means of transportation. As already discussed under subsistence production getting access to any means of transportation for agricultural purposes is very difficult and expensive in communities without road (Moglaa). In

the marketing of subsistence produce it must be understood that the two vehicles are virtually out of place since it does not only serve Moglaa but other communities along the Savelugu Kumbungu road. I noticed from the interviews that farmers do not count or rely on the vehicles for the marketing of their agricultural produce. They prefer the motor kings which are readily available and less expensive. The motor kings also come and go at a farmers request making it more user friendly compare to the vehicles which have their own specific time of departure. Acquiring a motor king to transport a farmers produce to the market is very difficult as discussed under production.

In the previous chapter, I stated that due to the untarred road motor king operators are not willing to commute to and from Moglaa thus they (motor king drivers) only commute or travel to and from Moglaa at higher fees. Since their services are not regulated by any union or body operators have the liberty to decide the fee for traveling. Thus subsistence farmers in Moglaa have to use long times to acquire a motor king sometimes making use of their social statuses and relation yet at higher fees than farmers in Yong. A farmer in Moglaa told me *“The transport cost is too high it does not fit my pocket. The high transport cost makes me reluctant to go to the market”*. The interviews did not reveal any specific prices for the renting of a motor king but the situation is understandable because the price of hiring a motor king is primarily dependent on the operator and the quantity of goods to be transported and a farmer’s social relation with the operator. Thus price may vary from operator to operator and social relations may also lead to price variation. As I stated, farmers and traders are very much aware of prices of their commodities. At the time of my field work a bag of maize was selling between 45 -50 Ghana Cedis. This is the highest a farmer could or can get for a bag of maize in both communities or in Savelugu. An increase in transport costs for subsistence farmers in Moglaa means reduced revenue because both communities are within the same distance range and receive the same price for a bag of maize. Thus if a farmer in Moglaa pays more for transport on the same quantities of bags than a farmer in Yong and the selling price remain the same then the farmers in Moglaa have their agricultural profit or revenue greatly reduced.

After the frustrations and delays in the acquisition of the motor king then there is the trouble of transport safety and crop damage. A farmer told me: *“The last time I lost some bags of grains*

because of the bad road. The motor king was tossing me here and there and some bags of grains fell off the motor king. The grains were mixed with the dust and I could not pick most of them up for market. I would have gone off myself if I had not held the motor king well". This is the trouble subsistence farmers in Moglaa and communities without roads go through to get to the market. Their crops or produce are the most likely to lose value during transportation due to damages. The first instance is that, because of the dirt no trader want to buy and those who buy will pay far below the market price. The damage to crops reduces their market value thus reducing the revenue (profitability) farmers get for their crops. If a farmer would have to waste time, bear a high transport cost and also endure the head aches, body pains as a result of traveling to the market then why not let the trader endure that for a lower price. Subsistence farmers in Moglaa do not expect to get higher prices in their community when the traders come to buy in the community but they save themselves the troubles associated with travelling on a bad road.

The higher transport cost reduces revenues for subsistence farmers in Moglaa compared to their neighbours in Yong. Thus going to the market with larger quantities means a farmer can make more profit than going to the market with lower quantities. And so with lower quantities farmers prefer to primarily sell to traders in the community. Farmers explain that because of the bad road traders are not willing to come and even those who come as stated, buy their produce at a much lower prices compared to the market price or compared to the prices farmers in communities with road receive. Subsistence framers in communities without roads have no option than to sell to these traders considering the risk and troubles of going to the market especially in cases of lower or small quantities.

Subsistence farmers in Yong shared similar experience when there was no road in their community two year ago but now the opposite is the experience when it comes to the marketing of their agricultural produce. In Yong subsistence farmers have easy access to the commonest means of transportation and more (taxis) and also at a much lower price. This is made possible by the road because the road has reduced the distance between Yong and Savelugu. The road has also reduced traveling time, damage to vehicles and motor kings thus the cost of travelling. For this reasons motor kings and taxi drivers are more willing to travel their community. Although interviews revealed that there were no motor king or taxi drivers in the community farmers

claimed they easily go to the market to sell their produce than before because Savelugu have become “like moving from house to house”. This is the experience of a farmer in Yong “*I do not think so much about going to the market. Sometimes I go sometimes I sell to the traders who come here to buy from us. Because of the road the market price is not much different from the price they (traders) pay me here. The last time I checked it was one cedi difference between the price I was paid at Savelugu and the price I was paid here*”. *The one cedi difference is their transportation cost. Before the difference was very huge*”.

Subsistence farmers in Yong and communities with road are not in a rush to go to the market for better prices because they get virtually the same price in their communities. Both farmers and traders are aware of the price of crops and the road is no more a disadvantage in the negotiating of prices. But years ago traders paid less because they use the road against them in negotiating the price of crops. With the road subsistence farmers in communities with roads are able to reduce their transport cost and thus increase their revenue. The quotation above indicates that, in time past when there was no road the difference in prices between selling at the market and the community was very huge. This is not the case anymore because of the road. Now traders cannot use the road against farmers and farmers can now easily access the market for themselves. Compared to the past when there was no road just like Moglaa interviews indicated that traders were not willing to come because of the frustrations and risk of traveling there. This to a great extent reduced the prices traders paid for their produce.

If a farmer had to go to the market for his or herself when there was no road in Yong then he or she had to go through the frustrations, pains and risk of accessing motor king at higher cost than now. The higher transport cost reduced the profit because no trader was willing to pay more than the market price. As already stated the highest market price a farmer could get at the time of my field work for a bag of maize 45 to 50 Ghana Cedis. Subsistence farmers in Yong just like Moglaa will get the full market price but because farmers in Moglaa have less transport cost, are the least likely to suffer crop damage they also tend to get the highest profit or revenue from the sales of their produce. Subsistence farmers in Moglaa pay higher transport cost than farmers in Yong yet they receive the same price for their commodities. This means the revenue of farmers in Moglaa is reduced by the higher transport cost.

Generally speaking road access in rural subsistence communities can help increase the profitability of subsistence agriculture in the northern Ghana if a farmer decides to go to the market. Subsistence farmers mostly suffer lack or low storage facilities. Interviews revealed in both communities that storage facilities remain one of the principal needs of subsistence farmers in northern Ghana. Storage facilities are mentioned by farmers as one way of making subsistence agriculture more productive and profitable. A farmer told me: *“Just after harvest the price of farm commodities go down but months after harvest the price go up but we do not have the means to store our farm produce so you sell them early when you can or they might go bad and you will reduce the revenue”*. In the presence of poor or low storage facilities farmers are somehow forced to sell their produce which they know will fetch them higher prices in the near future. Thus for a farmer in a community like Moglaa which is without road subsistence agricultural become less and less profitable. First of all he or she is forced to sell at a price which he or she knows will increase in a few months from harvest time. Secondly the untarred road increases his or her cost of production via transportation cost and accidents. This reduces the market value of his or her produce hence reducing his or her revenue by huge margin compare to farmers in Yong. Finally when buyers manage to come to the community the untarred road makes them buy at a lower cost.

Social relations are very much important at the marketing of subsistence produce just as it is in during production. Whilst in the access of purchased inputs social relations with people like plough operators is important, in marketing farmers need their social relation with traders. From the interview I noticed in both communities farmers rely much on their social networks or relations with traders to enhance the speed at which a farmer can sell their produce. Farmers in both communities who have produce to sell can also contact traders. A farmer told me: *“Sometimes I call them and sometime they just come here*. The calling of traders indicate a strong relation between the farmer and the trader. These social relations have the tendency of reducing the disincentive bad roads pose to traders and farmers in communities without road like Moglaa. But just like in production subsistence farmers in Yong and other communities with road even benefits a lot from their social relation because the good road go a long way to better the customer relations in that, time of traveling is reduce, transport cost is reduce and travelling

safety is improved by the road. The end result is the increasing market interaction between farmers in Yong and traders and thus increased revenues.

6.6 Conclusion

In conclusion this chapter has highlighted the two categories of subsistence agricultural marketing. The chapter have illustrated that modernization has increased the need to market in subsistence agriculture because of increased production and life cost. But all subsistence farmers have two categories of marketing their produce. Although the production orientation of subsistence farmers remain the same their marketing practices are been modified. There is the categorization of staples into importance. This has led to staples like groundnuts easily go to the market while maize is for household consumption and go to the market in cases of surpluses. Generally speaking marketing of subsistence produce in the northern Ghana is more about ideals of honour, food security and customs than profit thus farmers prefer to sell among and to themselves. But when a farmer is selling to traders or in the market the influence of road access is seen in how road access makes the marketing of produce more profitable through reduced transport cost and reduced crop damage. This is how good roads raises the image of subsistence agriculture by making the marketing of subsistence produce so easy and fast as indicated by the first quotation of the chapter.

CHAPTER SEVEN

DISCUSSION AND CONCLUSION

7.1 Introduction

In this chapter I discuss the findings of the study and a summary of the study based on which a conclusion is made and some recommendations suggested. I discuss my empirical findings of in relation to the theories employed and existing literature. My aim here is to explain issues of subsistence production and marketing using the theories and concepts employed as well as existing literatures.

7.2 Discussion of Findings: Rural Road Transport

This study identified that improvement in roads do not necessarily come with improvement in transport services. For this reason motorized transport is generally poor even in communities with road. This is because the government constructs roads in the country while service is dominated by the private sector. For instance in the Compact One (2004) of the Millennium Development Authority (the government authority acting on behalf of the government of Ghana for the achievement of the Millennium Development goals) the objective for the construction of the roads in Yong and other rural communities in northern region is clearly stated. In like manner the process and source of funding is also stated. But there was nothing about the provision of transport services. This means that a community can have a first class road without service because improvement in roads does not come with improvement in service. The end result is low transport services and high transport cost in rural Ghana. Subsistence farmers in the communities under study who are mostly rural dwellers pay for the entire journey from Savelugu to Kunbumgu or from Savelugu to Nanton making the transport cost expensive that is if choose to go by bus . Mitiku (2009) noticed that, the Africa rural farmer pay higher transport cost than their counterparts in Asia and Latin America because of inadequate transport services (See also Carapetis et al., 1984).

Carapetis, explains that, in Africa governments concentrate on infrastructural building assuming the private initiative will respond to the demand of services. But the private initiative have not met the service demand hence inadequate transport service is a major constraint in Africa agricultural development. This suppose that in Ghana and most Africa agriculture is hindered by two factors. The first is the road infrastructure and the second is transport services. The private sector dominance in transport service have increase transport cost and have also made transport services more visible in rural areas with road infrastructures (Abane, 2013, See Chapter Five). Neither of the two schools of transport and development explains the phenomenon where governments build roads and leave service to the private man (See Chapter Two).

The inadequacies of transport services in rural communities have led to farmers' reliance on IMT for their agricultural production and marketing activities (See Chapter Five). In the words of Starkey (2001) the adoption of IMTs is dependent on their low cost and their potential to provide economic benefits. According to Ajiboyen and Aflolayan (2009) IMTs dominate rural transport in Nigeria rural communities because vehicular travels are none existing. Porter (2002) also argued for IMTs in rural areas especially in communities without road because vehicle travel is not sufficient in most rural areas in Ghana. Even with IMTs communities with roads are those who benefits the most to promote their agricultural activities (See Chapter Five and Six).

7.2.2 Subsistence Production and Modernization

This study identified that subsistence agriculture in the northern region of Ghana is a social production activity that hinges on the erratic rains of the savannah. In the words of Lynn (1973; Yaro, 2013: 93) agriculture in the north of Ghana is not a business but always a customary activity in which the ma of production is determine by the rain or nature. The rains are so important to subsistence production in the savannah region thus it constitute the fourth category of greetings in the region. "Nitimasini" is the greeting in subsistence communities when it rains. This greeting surpasses all other greetings. Whenever it rains been it morning, afternoon or evening, the greetings for morning, afternoon, and evening is replaced with the rain greetings. This indicates the importance of the rain to subsistence communities in the savannah regions of Ghana.

The study also identified that, the erratic rains have made modern farm implements like the plough very important to subsistence farmers. After the long dry season in such savannah areas it is very difficult to plough the land with the hand so farmers wait till the first rain to plough the land because the ground becomes soft for easy ploughing. Ploughing with the hands means a farmer will lose the first days of the rain to ploughing. The plough machine can plough whether it rains or not thus farmers employ it to plough their fields in wait of the rains making use of the early rains. Other modern farm inputs include fertilizers, weedicides and pesticides. Furthermore, the study identified a mixed method of production among subsistence farmers in the northern Ghana (See Chapter Five). This finding agrees with the finding of Kombiok et al., (2012) who also identified that agro-chemicals such as fertilizers are expensive for northern subsistence farmers so they mix organic manure with the chemical fertilizers as a way of improving soil fertility for better production output. Generally speaking the study identified a high reliance of subsistence farmers on purchased or modern inputs which agrees with the study outcomes of the Northern Presbyterian Agricultural Services (2012) that there is an increase in the number of imports companies and use of agro-chemicals among farmers in northern Ghana. The organization also noticed that there is a high incidence of agro-chemical related diseases among northern farmers illustrating the increase use or reliance of farmers on purchased inputs.

7.3 Structuration and Subsistence Production

Subsistence agriculture as a social production activity is a result of the interaction between knowledgeable agents and the structures they are involved in. The agency of the subsistence farmer is always expressed through the subsistence production culture which is production to feed the family. This means that it is the family or the community that determines the staple crops of production. The structuration theory posit that the agent and the structures (resources) come together to explain human action. The theory therefore indicate two types of resources which the knowledgeable agents employs for social action. The allocative and the authoritative. The allocative is of the external environment and authoritative resources have command over the agents (See Chapter Two). The rain and road are the allocative resources which are from the external world. Status and norms are authoritative resources which generate command over the

agent. Farmers' status as the head of the household gives him the duty of feeding the family and this is his honour in the community. This goes to reinforce the fact that the farmers must produce what the family will consume which is only not his duty but also his very worth or honour in the community. The rain determines the length and output of production for the farmer and the road helps subsistence farmers take advantage of the rains especially in relation to their access of purchased inputs (See Chapter Two).

This explains why subsistence farmers in both communities still produce the same staples crops such as maize, groundnut, rice, yam, cassava and sorghum (See Chapter Five). Because it is the duty of the land lord to feed the family which is also his honour, they care little about which crop fetch them higher prices although they have knowledge of crop prices (See Chapter Six). They primarily produce what the family will eat which is their duty and honour. Generally the production purpose of the subsistence farmer is to produce to feed to the family, his position as the land lord ascribed to him the duty of feeding the family and this becomes his honour in the community. This contradict Mitiku's (2009) argument that, with road access farmers will tend to produce more competitive cash crops. This also explain why female crops and male crops in northern communities. Female farmers produce the same staples as their husbands or as the male farmers unlike most part of southern Ghana where there are women crops and male crops (See Carr, 2008). This is because female farmers also help feed the household to maintain or protect the husband or household honour. The norm of honour may explain agriculture in northern Ghana is fixed (Yaro, 2013).

7.3.1 Regionalization, Complementarity and Transferability.

The concept of regionalization illustrate that social life depends on the interactions with and between others who are co-present in time and space. The concepts of complementarity posit that interaction with and between others who are co-present is dependent on demand-supply relation while the concept of transferability posit that this interaction with and between others is easier when the benefits of the interaction exceed the cost of the interaction (See Chapter Two). Subsistence agriculture as a social or customary activity depends very much on interactions with

others such as plough operators, extension agents and other farmers. Extension agents are one particular group of people rural farmers need to constantly interact with for effective production because they educate farmers on new agricultural innovation and how to apply such innovation. Access to extensions agent for example is highly influence by road access thus communities with road are those who access extension agents regularly for the benefits of their agricultural activities (See Chapter Five).

In a nut shell the structuration theory provides a framework to explain why farmers produce staples crops despite the road which give them access to the market. It explains why subsistence farmers in communities with road are not any more economically minded than subsistence farmers without road. It give an understanding of why female farmers also produce the same crops as the male farmers. None the less farmers with road make the best of the rain because the road help them access modern farm inputs on time and at a low cost. Here this research agrees with the positive school of transport thought that roads are life line for agriculture production on the continent (Olubomehin, 2012). Due to the role of road in promoting agricultural production subsistence farmers without road generally employ their social relations and statuses as coping or adaptive ways of reducing the disincentives of the bad road (See Chapter Five).

7.4 Structuration and Subsistence Agricultural Marketing

It was also the objective of this research to study the influence of roads on subsistence agricultural marketing. The same theory provided the framework for understanding how farmers employs the resources in their communities for subsistence agricultural marketing (See Chapter Two). The agency of the northern subsistence farmer indicates the rain as the most important resource even in subsistence agricultural marketing. It determines production output and it can fail any farmer at any time. For this reason northern subsistence farmers sell to and among themselves as way of securing themselves against crop failure or poor harvest. Norms of honour or worth also explains why farmers sell to and among themselves. By selling to your neighbour you help your neighbour feed the family and to maintain his honour which is the honour of the community.

The structuration theory posit that the agent and the structures (resources) come together to explain human action. The most important resource to the subsistence farmer is the rain. As already stated the rainy season determines the duration and output of production. The rain is out of human control and the agency of subsistence farmers in northern Ghana indicates that the rain can fail anybody at any time as already discussed. Selling to and among themselves is a way of ensuring food supply or sustenance in times of poor harvest or food shortage. Hunter (1967) argues that in the savannah of Ghana because livelihoods depend on the rain the people developed different strategies to overcome food shortage or seasonal hunger. The study argues that, one of the ways of ensuring food sufficiency among subsistence farmers in northern Ghana is selling to and among themselves. Farmers selling to and among themselves in the communities is also a way of maintaining the honour of individuals in the community and the community's honour at large (See Chapter Two and Six).

Apart from selling in the community to themselves or among themselves there is also another type of marketing where farmers go to the market or traders come to the community to buy from farmers. The study identified that, the influence of roads are much visible with this type of marketing. Here farmers either go to the market or traders come to buy from them in the community. This is where roads as allocative resources become a differentiating factor (Voigt, 1967: Addo, 2006, Mitiku's 2009). Farmers in communities with roads like Yong travel to the market at lower cost. They are also the ones who are unlikely to suffer crop damages as a result of bad road thus increasing their revenue (See Chapter Two and Six).

7.5 Coping or Adaptive Measures

One particular finding of this study is how rural subsistence farmers cope or adaptive in the communities without roads. Social relations comes in to help famers in communities without roads to curb the disadvantage of an untarred road. As argued by Lie (1997) social relations built friendships, kinships sustain economic relations. In subsistence agricultural production a subsistence farmers without roads depend on their social relations with for example plough operators to reduce the delay in access of farm inputs like the plough. The use of use of mobile phones in subsistence agricultural marketing also illustrate the importance of social relations in

subsistence agricultural marketing. Mobile phones according to Molony (2008) makes it easy for farmers to send information and keep track of goods. Mobile phones ensure farmers sell their produce to the right trader for better revenue. Thus through social relations farmers can reduced the disadvantages of living in a communities without road.

7.6 Summary and Recommendations

The main objective of this study was to explore the implications of road access for subsistence agriculture in the northern Ghana by comparing two subsistence communities the one with road and the other without. The study explored specific objective such as how road access influence subsistence agricultural production, and subsistence agricultural marketing. The focus of the study was to do a comparative study that will depend on the experiences and perceptions of subsistence farmers from two subsistence communities in the same district with the same district or market town in northern region of Ghana to elucidate the implications of roads for subsistence agriculture. Thus one subsistence community had a two year old road and the other have an untarred road. The community with the two year road I called community with road and the community with untarred road I called the community without road. The study was influence by the general perception that areas or communities with road are better off than communities without road in terms of agricultural production and profitability.

The structuration theory provided a framework to explain why rains and roads are two important resources but the rain is the most important resource to the subsistence farmer. Through the same theory the study illustrated that social norms and statuses determine what must or can be produce not the market in both communities. Furthermore the study indicated that subsistence farmers understanding of marketing is more complex than just selling for market gains. It entails issues of food sufficiency and honour. The concept of regionalization was employed to illustrate the importance of traders, drivers and extension officers to subsistence agriculture in northern Ghana. The concepts of complementarity was employed to illustrate the demand and supply relations between the subsistence communities and the market towns. Transferability illustrated that roads made the interaction of farmers in Yong more profitable. Below is a summary of my findings.

First of all this research identified that, subsistence agriculture in the northern Ghana is dependent on rains and not the road. The rain determines production output not the road. The road in the first place does not guarantee services. Due to the inadequacies and the high transport cost associated with the few motorized transport services, IMT remains the best transport means for subsistence farmers. The motor king is seen as the best transport service for all agricultural activities in northern Ghana because of its numerous and cheap nature. For a farmer to take advantage of the rain for maximum production output he or she needs a road. Although roads does not guarantee service it has the advantage of directing traffic towards communities with road. Because farmers have a short rainy period to produce all that the family will eat and more the roads makes it easier for farmers in communities with road to access purchased inputs allowing them to take advantage of the rain for effective production. The road also allow farmers to make profit on their marketing activities through low transport cost.

Modernization the process of global inco-operation have resulted in a mixed method of production. It has increased the cost of living and production thus have created the need for marketing of subsistence agricultural produce. Due to the increased need to sell subsistence produce there is a modification in the marketing practices of subsistence farmers. The modification is reflected in the categorization of staples base on its importance to the household survival. Thus staples like groundnuts easily goes to the market while maize is used primarily to feed the family and goes to the market in cases of surplus or extreme needs. Generally speaking the study identified that, subsistence farmers understanding of marketing is very different from the planners understanding of market. Thus to the subsistence farmer there are two categories of marketing. The first category of marketing is dwells on issues of food security and mechanism. It is also about norms of honour in society. The second category of marketing is what subsistence farmers in northern region share in common with planners. This type of marketing is for economic gains. With this category of subsistence marketing roads become imperative to the profitability of subsistence agriculture.

The implication of road access on subsistence agricultural production and the marketing of subsistence produce can be summarized as such farm expansion, reduced damage to crops,

healthy farms and farmers and time management. Since subsistence farmers with road easily access the factors of productions they are able to put more land under cultivation. They also suffer less from crop damage as a result of transportation and thus they get the best prices than their counterparts without road access who suffer crop damage as a result of road accident. Again subsistence farmers with road access easily get the needed information from extension agent. When applied they produce healthy farms and the farmer is free from any effective of misapplication of agro-chemicals compared to their counterparts without road access and low or no interaction with extension agents. Finally farmers with road access do manage farm time well. That is because they access the factors of production easily and timely they can therefore time and plan well to take advantage of the rain than farmers without road access. Farmers without road access suffer delays and frustration in accessing the factors of production and the market thus affecting their time management practices.

By way of recommendation, subsistence communities' produce to feed the family. This is not only the identity of subsistence farmers in the northern Ghana, it is their duty or role as head of the family and their very honour or worth people of their communities and culture. Thus I first recommend more research be done into the area of social organization of subsistence agriculture so as to understand the people and what agriculture means to them. More research needs to be done in the northern Ghana to highlight issues of subsistence agricultural marketing which is a very complex phenomenon. Access to market or traders does not mean subsistence farmers will use those market opportunities. Their concept of market is good strategy for food security and a way to reduce or prevent seasonal hunger which is prevalent in the region (Hunter 1967).

The study further recommend that the way of subsistence farmers in northern Ghana today need to be encourage especially considering the savannah environment. Food shortage is always possible in such environments thus governments and planners should encourage their way of marketing which issues constant food supply while at the same time ensure the worth or dignity of the people. The marketing idea of subsistence farmers in the north is good food security measure which the government can promote to ensure food security or reduce hunger in the region. The long run effect will be seen in food adequacy in the nation.

Finally I commend the construction of roads in rural subsistence communities but suggest that, since agriculture is the backbone of the nation's economy to ensure roads play a very meaningful role in subsistence agricultural growth especially in regions like the northern region where cash or export crops are virtually is none existing government policy must not only concentrate on the road infrastructure leaving service to private initiative. This strategy has created a situation where demand of transport services always exceed supply. When demand exceed supply the cost of transport increases thus draining the financial resources of the rural poor. It is true that rural subsistence farmers and dwellers hardly travels especially outside the planting season but because life evolve around the rain such time are critical time for farmers (Ajiboyen and Aflolayan, 2009). A delay as a result of no or low transport services can deter production and possible hunger. The private operators cannot provide services of seasonal importance thus government must take over service provision especially to rural communities.

7.8 Conclusion

To bring my discussion to an end, my study has highlighted the implications of road access for subsistence agriculture in the northern region of Ghana. This was achieved through or by studying two subsistence communities the one with road and the other without road. The study illustrated that rural subsistence communities with road are better off than communities without road especially in terms of agricultural production. Despite the rain being the main determinant of subsistence agricultural production in northern region, road access help farmers get easy, timely and lower cost access to the factors of agricultural production which allow them take advantage of the rain for the benefits of production. In the area of marketing subsistence agricultural produce, the study has illustrated that there are two categories of marketing and the issue of better prices as evident in most literatures comprises the second type of subsistence agricultural marketing in the northern region of Ghana. The results of the study demonstrate a more complex story although it also add to the growing literature on the importance of road access for agriculture on the Africa continent. The study has contributed to the growing knowledge on the transport-agriculture relation on the Africa continent. It is the conclusion of the study that although road access do not determine what type of crops is to be produce or when to produce road access are necessary for subsistence agricultural growth despite it negative effect

of pollution. Road access are very much important in the area of production because subsistence agriculture is rain fed and once the rainy season begins farmers need easy and timely access to farm inputs so they can take advantage of the rain for effective production. This is because most farm inputs are accessed from market towns. The idea of market opportunities as stipulated by governments and planners does not necessary coincide with idea of marketing of the northern subsistence farmer. Subsistence marketing is first and foremost about food security and honour of a person not for economic gains. Rain fed subsistence agriculture in the northern region of Ghana is more of social economics and thus hinges on social capital (Uphoff and Wijayaratna, 2000) that ensures constant and regular flow of staple food crops or food benefits.

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Appendices

Appendix One: Master Study Research Interview Guide for Community without Road 2013

ROAD TRANSPORT AND AGRICULTURE: A COMPARATIVE STUDY OF THE IMPLICATIONS OF ROAD ACCESS FOR SUBSISTENCE AGRICULTURE IN THE NORTHERN GHANA.

Respondent Gender

Marital status

Family size

Apart from agriculture are respondent engage in any other economic activity?

Do have your own means of transport?

Is respondent means of transport suitable for his/her farming practices?

Road access and Agricultural production

1. What type of farming practices are respondents practicing?
2. Farm size?
3. What type of crops do you cultivate? Why?
4. How is the road access helping you access farm inputs?
5. Compare your access to and use of farm inputs before and after the road?
6. Do you use plow machine and why?
7. Compare your access to and use of the plow machine before and after the road?
8. Do you receive government extension services?
9. Compare your receiving of government extension services before and after the road?
10. Is the road access a motivation to adopt modern forms of agriculture productivity, why?
11. Is the road access a motivation for you to produce more or have the road access impacted on your farming productivity? Compare?
12. Have you actually increase the size of your farm?
13. Do consider time in your daily farming practice?

Road access and Agricultural marketing

14. Are you aware of market prices before the planting season?
15. Do you sell at farm gate or at the market?
16. What influence respondents decision to sell at farm gate or the market?
17. Is respondent's decision to go the market or otherwise dependent on quantity or type of agriculture produce?
18. Does road access influence your decision to go to the market?
19. Have the road access increase your market opportunities or increase your revenue, How (compare)?

20. Is the increase revenue any sort of motivation to produce more or adopt modern forms of farming practices?
21. On the whole how have road access impacted on your ability to market your agriculture produce, How (compare)?
22. Is the road meeting your current agriculture needs? How?

Rural Transport Service

23. Compare your transport cost before and after the road?
24. What is your impression about the rural transport service?
25. What means of transport best suit rural agricultural development?
26. How can rural agriculture be improved?
27. What is your most important need as a rural farmer?

Appendix Two

Master Study Research Interview Guide for Community without Road (2013)

ROAD TRANSPORT AND AGRICULTURE: A COMPARATIVE STUDY OF THE IMPLICATIONS OF ROAD ACCESS FOR SUBSISTENCE AGRICULTURE IN THE NORTHERN GHANA.

Demography

Marital status

Family size

Apart from agriculture are respondent engage in any other economic activity?

Do have your own means of transport?

Is respondent means of transport suitable for his/her farming practices?

Road access and Agriculture productivity

1. What type of farming practices are respondents practicing?

2. What type of crops does respondents' cultivate and farm size?
3. Does respondent use inputs like fertilizers, plowing machines and weedicides?
4. How do you get access to the plow machine?
5. If the plow machine is rented do you think you pay higher for the plow machines for the same piece of land than those villages with tar road?
6. How does the untarred road access affect respondent's access of and use of agriculture inputs (fertilizers)?
7. Do you receive government extension services?
8. Do you think the untarred road affect your receiving of government extension services, how?
9. Does the untarred road reduces your desire to produce more or your desire to engage in modern or large scale farming?
10. Do you consider time in your daily farming practice, how?
11. Respondents' general impressions of how the untarred road influence agriculture productivity?

Road access and Agriculture marketing

12. Are respondents aware of market prices before they engage in agriculture production?
13. Do you sell at farm gate or at the market?
14. What influence respondents decision to sell at farm gate or the market?
15. Is respondent's decision to go the market or otherwise dependent on quantity or type of agriculture produce?
16. Does the untar road influence your decision to go to the market or not?
17. Do you think the untar road access reduce your marketing opportunities or your revenue, How?
18. If yes is that a reason not to expand or produce more.

19. Do you consider time in your daily marketing practice, how?
18. The influence of the untar road access agriculture marketing?
19. On the whole does the untar road meet your current farming needs?

Rural Transport Service

20. Does transport cost discourage your going to the market?
22. What is your impression about the rural transport service?
23. Do you think it can be improve?
24. What means of transport do you think will best suit rural agriculture development?
25. How can rural agriculture be improved?
26. What is the most important need of the rural farmer?
27. Do you think roads are important for agriculture development?