

UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

**ASSESSING THE ROLE OF SOCIAL CAPITAL IN WOOD CLUSTER
INDUSTRIES. THE CASE STUDY OF WOOD CLUSTER INDUSTRY IN
SUNYANI MUNICIPALITY**



BY

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JULY, 2014

UNIVERSITY OF EDUCATION, WINNEBA

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A Dissertation in the Department of CONSTRUCTION AND WOOD TECHNOLOGY EDUCATION, Faculty of TECHNICAL EDUCATION, submitted to the school of Graduate Studies, University of Education, Winneba in partial fulfillment of the requirements for the award of Master of Technology (Wood) degree.

JULY, 2014

DECLARATION

Student's Declaration

I, Anthony Kwao Amponsah declare that, this Dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE.....

DATE

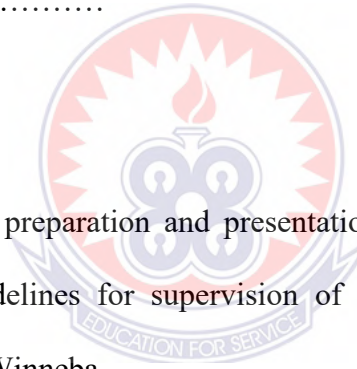
Supervisor's Declaration

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR

SIGNATURE.....

DATE.....



DEDICATION

This piece of work is dedicated to my family for their encouragement and support during the period of study.



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Foremost, my sincere thanks go to God Almighty for helping me with this project.

Secondly, my sincere thanks go to Dr. Martin Amoah, who supervised my work, encouraged my efforts and displayed a great deal of patience and understanding during the period of writing this project.

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ABSTRACT

The study examines the role of social capital in wood cluster industries in Sunyani Municipality. Descriptive survey was used for the study. The population of the study consists of artisans in Sunyani wood cluster, wood suppliers, machine operators, buyers, sellers of wood products and financial institutions in the Sunyani wood cluster. Convenience method of sampling was employed to arrive at a sample size of 200. Questionnaires were used as data collection instruments for the study. Statistical Package for Social Science (SPSS) was used to process and analyse the data. Findings from the study indicated that the wood cluster industry consist of two groups of actors; the core actors and the supporting actors. The core actors are the artisans and they produce the wood products in the cluster. The supporting actors are members in the cluster who provide the needed goods and services to complement the activities of the artisans. The study further showed that the wood cluster facilitates the activities of the actors in terms of availability of materials, tools and equipment which resulted in reduction in production cost, improved sales and profit margins, number of artifacts produce, market price control and access to new market. The study also reviewed that social capital plays major roles in the wood cluster industry; these resulted in easy access to information, sharing of ideas and tools among artisans, networking, social ties and easy access to sub-contract. It is also worthy of note that the wood cluster industry has a lot of challenges that affect the activities of the actors. These include access to credit, high interest rate, raw materials, promotion and marketing of wood products, utilization of wood residue, cost of utilities, lack of interaction between firms and educational institutions and unavailability of research findings to firms.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In recent years there have been growing concerns on the role of location of businesses in the industrial development of nations and regions. Some industrial geographers argue that globalization, improved communication and effective transportation systems are making the location of businesses irrelevant, but others however have expressed the opposite view that globalization is actually increasing rather than reducing the importance of business locations (Gray, 1998).

Many researchers and entrepreneurs agree that companies and businesses do better when they are closer to each other and to their customers since there is a high rate of interaction and cooperation among the companies in the same location (Doeringer, 1995). The geographical concentration and the interaction of companies from particular industries have always been part of the world's economy, even though under different names such as industrial district, industrial clusters and industrial parks (Cortright, 2006).

The cluster concept over the last decades has gained a lot of considerable interest and has become a well-established term in the business enclaves (Ketelss, 2004). One of the most influential exponents of the cluster concept is Michael Porter, whose notion of industrial cluster has rapidly become the standard concept in the field. According to Porter (1998), an industrial cluster is a geographical concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries and associated institutions (universities, standard agencies, trade associations) in a particular field that

compete but also co-operate. Two broad categories of how clusters emerge are, first clusters that originate as a result of spontaneous agglomeration of enterprises and other related actors, secondly clusters induced by public sector policy or central government to stimulate regional and urban economic growth (Ponds, Roderik, Frank and Koen Frenken.2007) The cluster concept is known to offer a lot of competitive advantages which can help the development of Small and Medium Enterprises (SMEs) especially in the wood industry in Ghana where there are a lot of SMEs.

Feldman and Maryann (2001) argue that members of cluster benefit from each other in a number of ways such as shared physical infrastructure, reduced interaction and operational cost as well as access to specialize labours force. Due to the concentration, proximity and interdependence of clusters, the participants benefit a lot which might not be possible when they locate outside the cluster or operate independently (Cortight, 2006).

All these mentioned benefits and among other things that one receives for establishing a firm or business in the cluster does not happened in a vacuum, there is a mechanism which acts as driving force to keep the unity and trust of the actors of cluster such that they are able to coordinate and cooperate to create the synergy needed in business environment, and this driving force is known as Social Capital (Gambetta, 1988).

Putnam (1995) defined social capital as features of social organization such as norm, and social trust that facilitate coordination and cooperation for mutual benefits. The role of social capital in the wood cluster industry is the focus of this study.

1.2 Statement of the Problem.

The wood cluster industry in Ghana is managed by people with diverse sociocultural backgrounds who have come to settle at one geographical area to apply their trade so as to create the needed business environment and competitive advantage for themselves.

A lot of studies have been undertaken by many researchers both local and international scenes to ascertain the benefits of industrial clustering to members and nations as a whole. According to Boschm (2005) an industrial clustering initiative is the surest way to interorganizational learning, easier access to local based knowledge, reduced operational cost, and increased productivity. Seiwaa (2010) in the local scene have investigated the benefit and challenges of wood cluster initiatives in Ghana but in spite of the foregoing, not much is encountered in the literature regarding empirically documented work about the role of social capital in the wood cluster industries in Ghana. This void in literature needs to be filled in order to increase our understanding, relevance and effects of social capital in industrial clustering in Ghana.

1.3 Purpose of the Study

The purpose of this study is to assess the role of social capital in the wood cluster industries in Ghana so as to give meaning to the nation's quest to establish wood cluster industries an approach towards the development of the wood industry.

1.4 Objectives of the Study

Based on the above purpose of the study, the following specific objectives are set for the study.

- (1) To identify the main actors of the wood cluster industry and ascertain their characteristics.
- (2) To assess how the cluster facilitates the activities of the actors.
- (3) To determine the role of Social Capital in wood cluster industries and the level of cooperation between the actors in the wood cluster industries in Ghana.
- (4) To identify the challenges of wood cluster industries in Ghana.

1.5 Research Questions

The following research questions are formulated to guide the study.

- (1) Who are the actors of the wood cluster industry and what are their characteristics?
- (2) How has wood cluster facilitated the activities of the actors in Ghana?
- (3) What are the role of Social Capital, and the level of cooperation among the actors in the cluster?
- (4) What are the challenges confronting the actors of the wood cluster industry in Ghana?

1.6 Significance of the Study

A study to assess the role of Social Capital in the wood cluster industries is important for several reasons. First, the successful completion of the study brings to the fore the approaches adopted by actors in the wood cluster industry in interaction and organization

of themselves towards effective and efficient improvement in productivity. Secondly, the findings of the study will provide policy makers with the various factors that affect the success of the wood industry and how they can be resolved to ensure maximum benefits of clustering to the wood industry and the nation as a whole.

1.7 Delimitation

In accessing the role of social capital in the wood cluster industries, it is of great importance to gather both quantitative and qualitative data from some popularly known wood clusters such as the Sokoban wood clusters in Kumasi, Techiman wood market, and other stakeholders in the wood industry scattered all around Ghana. However, this study was narrowed down in scope due to financial and time constraints, it therefore only confined itself to Sunyani wood clusters in the Sunyani Municipality of Ghana.

1.8 Limitations

The time allocated for this project is too small as the researcher needed to visit the Sunyani wood cluster a couple of times to abreast himself with their operations.

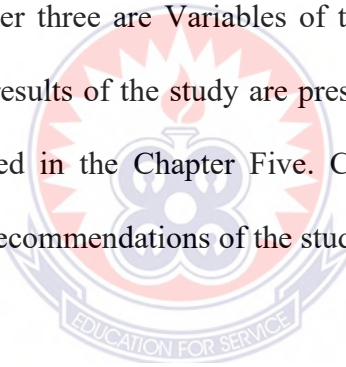
There was also a problem concerned with finance since the work was so involving that many people have to be consulted in order to get the needed information.

Also many of the artisans were afraid to give information concerning their income and source of wood due to fear of tax payment and harassments from officials of Forestry Commission.

1.9 Organization of the study

This report is composed of Six Chapters. Chapter One introduces the reader to the topic area. It includes Background to the study, Statement of the problem, purpose of the study and Research Questions. Other aspects of the Chapter are Significance of the study, Definition of terms, Limitations, and Delimitation (scope). Chapter two presents a synthesized review of the related Literature, while the Chapter three is devoted to description of the Methodology employed for the study. This includes Research design, the Population of the study, Sample and Sample selection, Data gathering instrument and Data collection procedures.

Also covered in the Chapter three are Variables of the study and the methods of Data analysis. In Chapter four, results of the study are presented, while the discussions of the main findings are presented in the Chapter Five. Chapter Six gives the summary of findings, conclusions and recommendations of the study.



CHAPTER TWO

2.0 LITERATURE REVIEW

The last decades, have seen a lot of literature been written and a lot of different views have been expressed on geographical proximity, clustering of companies, institutions and industries. Despite the existence of numerous types of literature, it appears that there is no evidence on how a specific framework can be applied to define a cluster (VomHofe and Chen, 2005). The cluster concept notwithstanding has gained considerable interest and has today become a well-established and popular term in the business fields. The reason for the increased interest in cluster is not only because they describe the economic reality, but also because they have become important for creating competitive advantage (Ketels, 2004).

2.1 Definitions of Cluster

Porter (1998) the first to use the term cluster has defined clusters in the following manner, as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries and associated institutions (universities, standard agencies, trade associations) in a particular field that compete but also co-operate”.

Rosenfeld (1995) on the other hand has defined cluster as a loose, geographically bounded agglomeration of similar and related firms.

Schmitz and Nadvi (1999) claimed that a cluster is a sectorial and spatial concentration of firms. Morosini (2004) defined an industrial cluster as a socioeconomic entity

characterized by a social community of people and economic agents localized in close proximity in a specific geographic region. Lowe and Taylor (2005) also maintain that a cluster is a group of businesses and institutions “that co-locate geographically in a specific region and enjoy economic advantages through this co-location.

Rosenfeld (1995), and Nadvi (1999) were of the view that cluster concept is all about localization economies, they defined clusters as group of entities placed within specific geographic boundaries that are part of the same industry sector.

2.2 Characteristics of Cluster

It is true that several researchers have come out with different characteristics of clusters, they do however agree on the main dimensions.

First of all is the geographical scope of a cluster, it varies considerably and it differs among industries (Cortright, 2006; Jacobs and De Jong, 1992; Porter, 2000). Clusters could spread from a single city, state or region, to a whole nation and even behind national borders (Enright, 2000; Porter, 1998). According to Braun et al., (2005) a Clusters’ boundaries are not exact, they grow continually as new firms, industries and local businesses emerge, develop, change, and declined.

Additionally, a cluster may differ in size, depth and breadth. Some clusters are made of small and medium enterprises, other have large and small firms. Others give birth to research institutions and universities while others create connections to existing research institution (Porter, 1998). Except in different geographical areas clusters occur in many

industries such as advanced and developing industries and in small and large firms (Porter, 2000).

Furthermore, a cluster has a depth and the state of development of an economy determines to a large extent the depth of a cluster growth and development (Ketels and Memedovic, 2008). The depth denotes different type of industries related by vertically relationships. The depth of a cluster can be deep or shallow, deep clusters are made up of set of industries and complete supply chain, while shallow clusters use mainly inputs, technology, equipment, support services from outside the cluster (Enright, 2000).

Again, a cluster is denoted by its breadth as well. The breath signifies the range of industries related by horizontally relationships. Clusters could be either broad or narrow. A broad cluster contains close and related industries and offers a wide range of products, while a narrow cluster contains one or a few industries and their supply chains (Enright, 2000).

Proximity or geographical co-location of firms is another characteristic of clusters. Clusters exist, grow and develop because companies and other cluster participants benefit from their concentration, proximity and interdependence, which might not be possible to such extent when they locate outside the cluster or operate independently (Cortright, 2006).

Industrial clusters is also characterized by the competition and cooperation relationships between the actors which is not an obstacle for mutual collaboration, but a means of foster unity and networking which ease communication within the cluster (Rosenfeld, 1997).

Finally, an industry cluster is further described by specialization, that is either the firms are into single products and services delivery or a multinational industry where majority of the individual firms are involved in many products and services (Spencer *et al.*, 2010).

2.3 Types of Clusters

Many industrial geographers have come out with different types of clusters. Enright (2000) defined five types of clusters, these include working clusters, latent clusters, potential clusters, policy driven clusters and wishful thinking clusters.

However, Rosenfeld (1997) refers to working clusters, potential clusters, policy driven clusters as being main types of clusters. Clusters that belong to this group are among the most dynamic and prosperous ones. Members of those clusters are aware of their interdependence; they work together as a system, produce synergy and realize their potential. Vom Hofe and Chen (2005) also reported of two main types of Clusters. These are:

1. Spontaneous groupings of firms, suppliers and public sector bodies around a growing industry.
2. Constructed clusters such as industrial parks and incubators, originating through policy mechanisms with specific objectives in mind. Vom Hofe and Chen further divided the spontaneous clusters into three useful categories – Informal, organised and Innovative. Firms in the informal clusters are generally, characterized by small to medium firm size, skill levels tend to be low, innovation levels are usually low, exports are non-existent, but competition between firms is high. The ‘organised clusters’, on the other hand are found in niche industrial sectors where innovation measures tend to be higher, firms are almost

exclusively SMEs, with a growing level of innovative activities and new but growing levels of skill development. Some are linked to public sector bodies and research facilities with relatively high levels of exports and developed markets. The Innovative clusters' are seen as the most advanced type of cluster formation. Firm's size is large, skill levels are very high due to the usage of modern tools and equipment.

2.4 Actors of Wood Cluster Industry

Giddens (1984) urged that actors of a cluster are knowledgeable people who know what they are doing and how to do it. They act by putting into practice the necessary structured knowledge to attract many businesses to the location which in long run develop to form an industrial cluster.

The wood cluster industry has many actors playing different roles to complement the activities of each member in the cluster. The actors in the cluster are mostly described in the economic literature as consisting of core companies and the related and supporting industries. The core companies are mainly the artisans who produce various artifacts for the public consumption and they are known as core actors. They include furniture producers, doors and frames producers, boxes and packaging producers, roof makers and designers.

Another key dimension of industrial cluster is the presence of related and supporting industries, this dimension fundamentally suggests that spatial proximity of upstream and downstream industries facilitate a continuous supplying of goods and Services and exchange of ideas and innovations (Porter, 1998).

In this respect, the supporting and related industries of wood cluster industry plays a very vital role such as supplying of materials, components, specialized services and equipment manufacturers, sources of innovation which is adaptable to the needs of the actors of the clusters in the region. The related and the supporting industries of wood cluster consist of wood merchant, buyers, marketers, machine operators, food vendors, research and training institutions, financial institutions and Government agencies. The wood merchants are members who provide the needed wood resources for the manufacturing of various wood products.

The buyers are the customers who come to the cluster to buy various wood products produced in the cluster. Those who make sure that products made in the cluster are sold to the general public are the marketers. The machine operators are the members of the cluster who ensure that the cluster has the services of needed wood machinery and equipment to facilitate the operations of the artisans. The food vendors ensure that actors get food to eat in the cluster. The government agencies provide the cluster with services such as good road, utilities and the security of the area to ensure conducive business environment and also collect tax for the government (Boon-Kwee, 2012).

The financial institutions are supposed to provide banking services and to grant loans to the actors. Finally the research and training institutions are to linkup with the firms so as to find solutions and innovative ways of doing things. The small-scale carpenters represent the largest actors in the wood cluster (Boon -Kwee, 2012)

2.4.1 The role of Government in industrial clusters

Cluster studies have revealed a need to redefine the role of government as a facilitator of networking, maintaining macroeconomic, political stability, and as an institutional builder (Porter, 2000).

Government has a role that demands the creation of efficient incentive packages aimed at eliminating all forms of bottlenecks in the local business environment which protects infant industries from imports and foreign competition (Dunning, 1997).

Moreover, government initiates the formation of local clusters as a public policy to bring about development in an area, although it is important that business drives the overall process, Government can do this by modifying its policies and practices, as well as motivating and providing incentives for the private sector to develop the cluster ((Deat, 2000).

It is possible that some constraints (human resources, infrastructure etc.) can be resolved by the private sectors, but issues such as road infrastructure, educational and training policies need a strong political will and interventions of Government to improve the business environment to bust productivity. (Anderson, 1994)

Ideally, when firms, suppliers, related industries, service providers and institutions are grouped together, government initiatives and investments are able to resolve problems common to all without government threatening competition. Therefore in this direction, government can facilitate businesses by building many needed public facilities that are relevant to many linked businesses. Finally government has a role of encouraging and

facilitate dynamic markets whilst ensuring that cooperation does not result in collusive behavior which curtails competition among members (Delgado, 2007).

2.4.2 What is the role of research institutions in industrial clusters

According to Rosegrants and Lampe (1992) a strong industrial clusters like Silicon Valley and the Cambridge Boston are said to rely strongly on the existence of a renowned university and research institutions. There is general agreement in the literature that universities and public research facilities often function as a crucial prerequisite for the development of local clusters. They work as creators of new knowledge, a source of entrepreneurs, founding high-tech firms and becoming cooperation partners for firms (Saxenian, 1994).

The universities trained the manpower requirement of industries and designed the need curriculum to suite the training needs of the labor market. They also design policies to the government and other stakeholders who make decisions that have effect on the industrial development of nations (Garnsey, 1998).

Again the Universities are often seen as the starting point of a local cluster and innovations. The changing nature of competition in market-based innovation systems have prompted the need for raid research so as to come out with new products and services in other to keep actors of cluster in business.

Furthermore, for firms to be more innovative, they are becoming more dependent upon complementary knowledge and know-how provided by the research institutions and the Universities (Saxenian, 1994) in other to be more competitive.

Finally innovation and economic growth is often situated within a unique combination of firms tied together by knowledge and production flows. There is a clear trend indicating the growth of industries and their research based.

2.5 How Cluster Facilitates the Activities of Actors

Clustering is considered as a powerful engine in the driving of economic structures of nations and regions. The competitive advantages within clusters enhance the micro-economic environment for businesses, leading to improved opportunities for innovation, enhanced productivity and improved business formation (Isard, 1956).

Carlino (1979) maintain that members of a cluster get access to extensive market, technical and competitive information accumulated within a cluster. In addition, personal relationships and community ties foster trust and facilitate the flow of information. These conditions help in the formation of networking and easy spillover of knowledge in the cluster (Porter,1998) . The co-operation and rivalry between key suppliers, artisans and customers in the cluster also increased the issues of quality which led to the adoption of innovative ways of doing things in the cluster.

The companies within clusters principally benefit from the pool of specialized workers, specific infrastructure with tailored training institutions, research and development organizations, seed and venture capital providing organizations. The availability of these tailored infrastructure" as a key advantage that firms in clusters enjoy help to resolve the needs of specific industries (Rosenfeld 1995).

Again small and newly established firms in the cluster can be given subcontract by the bigger firms to help the small firms to develop and establish themselves. Such kind of offers is not easy to get when a firm is not a member of the cluster therefore the emergence of new companies is easier within a cluster and the risks of entrance are lower, since the respective client-base exists already, the barriers for entering are lower with lower price (Roeland and den Hertog, 1999).

Cluster helps to reduce production cost due to deep and specialized supplier base, sourcing locally lowers transaction costs and delays. Proximity also improves communication and post sales service, leading to overall production efficiency improvement (Rosenfeld 1995).

Every actor within the cluster has the opportunity to benefit from each member in the cluster in so many ways since there is a greater level of co-operation and collaboration among the actors in the cluster, even members can benefit from joint activities such as joint sourcing of materials, services and marketing activities (Maskell and Malmberg, 1999).

The competition and rivalry among the actors in the cluster serves as a mechanism that compare them to come out with the innovation and new products to meet the market demands so as to be in business, by so doing the cluster serves as driving force for innovations which help them to adapt to changing trends in business and to bring about improvement in productivity Camagni (1995).

Harrison and Glasmeier (1997) suggested that, industry clusters respond best to incremental changes in technology and market demand, they claimed that in the presence of significant changes, clusters could facilitate adjusting to learning new technology due to high level of Spillovers and easy access to information.

Cluster members have more comprehensive information and understanding about the market conditions compared to companies operating in isolation, the collaborative relationships enable the Companies to acquire more information about new technologies, components, equipment, services, marketing and therefore placing them at vantage point over their competitors outside.

Industrial cluster helps the artisans to have easy access to tools and equipment for their operations. These tools and equipment which many individual artisans cannot buy easily is made available through suppliers of tools and equipment in the cluster. Members are also able to share tools and equipment among themselves due to strong social capital in the cluster (Delgado, 2007)

Many new companies grow up within an existing cluster. New suppliers proliferate within a cluster because a concentrated customer base lowers their risks and makes it easier for them to spot market opportunities. Individuals working within a cluster can better perceive the gaps in products or services around which they can build businesses

2.6 The Level of Cooperation among the Actors in the Wood Cluster

Becattini *et al.*, (2003) urges that economic process of the industrial cluster can be organized only where the development of a spirit of cooperation occurs. Many in the

literature on industrial cluster and on innovative milieu agree that cooperation is central for the working and success of clusters.

Ottati (1994) maintains that industrial cluster cooperation makes firms more successful and cooperation is often seen as part of the definition of clusters, especially by policy makers. Cooperation as mechanism in the cluster partly overlaps with the buying and supplying, because much cooperation between actors of cluster take place between buyers and suppliers, and is a known fact that most competitive firms find ways to work together even as they go head to head in the development of new products (Staber, 1996).

There is also a sort of cooperation between the members of the cluster and the Government, this cooperation is seen when it comes to Government policies on industrialization which has resulted in the establishing of industrial villages in many places such as the wood village at Sokoban in the Kumasi Metropolis. At this level the Government provides most of the basic infrastructure needs of the cluster such as roads, electricity, water, showrooms and workshops for the artisans. The artisans on the other hand pay revenue in the form of tax to the Government and employ many young people to reduce the level of unemployment in the nation and by so doing shouldering some of the challenges of the Government (Pond *et al.* 2007).

The modes of cooperation based on trust, familiarities, and tradition are most often described for industrial cluster, where they are believed to be one means by which small and medium-sized enterprises seek to counter internal scale economies enjoyed by their larger competitors.

There is collaborator relationship between companies that produce the same or similar goods and services at a specific level in the value chain, this exists because competitors frequently share information often unintentionally about product and market opportunities. These companies may in fact, formally collaborate to develop innovations in what is known as strategic alliances among firms in order to create global competitiveness, and enhanced productivity (Taylor, 2005).

Cooperation among the actors of clusters also occurs at the planning and designing stage of new products where highly inclusive cluster working groups that are market driven are set to hold events that focus on reform and redesign of services, adding value to existing resources and enabling market innovation.

Asheim, Park and Markusen (1995) contend that there is cooperation among clusters, public education and research institutions which results in the transfer of knowledge. This results in interaction and is argued to be important for the emergence of innovations and improvement in the local clusters.

The existing cooperation between firms and research institutions is also important for firms in their quest for researching and development to cause a stronger focus on demand driven research to address interventions relevant to the firms.

The industrial clusters members form networks which serve as mechanisms whereby firms exchange knowledge and information that cannot be codified, such tacit forms of knowledge are viewed as increasingly important given the rapidly changing global economic environment. The tacit knowledge must also be exchanged between

individuals, business entities which reinforcing advantages to spatial clustering (Lundvall, 1999).

According to Porter (1998), clusters approach has the advantages over traditional competitiveness mainly due to the high levels of cooperation among all the stakeholders in the cluster and the relevant relationships and complementarities between companies in the fields of technology, knowledge transfer, information sharing, marketing and client needs.

2.7 Wood Supply into the Cluster

Material supply into the wood cluster industry is a very important aspect of the supporting industry of the wood cluster. There are many different type of material supply into the cluster to facilitate the activities of the actors in the cluster. Porter (1998) contends that a strong cluster is the one with a very good supplying base.

The materials supply in to the cluster includes sown wood, plywood, adhesives, finishes, fasteners, Abrasives, preservatives, upholstery materials etc.

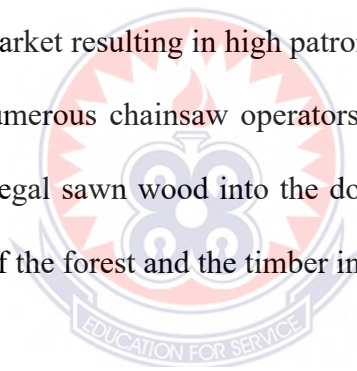
Wood is the most important of all the raw materials supply into the wood cluster, but over the years it has seen a down ward trend in its supply since the demand by the local wood industry is more than the annual allowable cut (AAC) which stands at One million m³ (FSD, 1995).

The total volume of sawmill lumber available for domestic use is only 152,660 m³ per year, yet the demand of the domestic end-users is about 384,730 m³. This means that the difference of 230,070 m³ has to be supplied from other sources (TEDB, 2007).

This difference in supply and demand has brought about high cost of wood and this is affecting the activities of the cluster. Some of the main suppliers of wood into the cluster are the sawmills, the wood merchants and the infamous chain saw operators.

The big sawmill are expected to supplied legal lumber to the domestic market in fulfillment of Regulation 36 of Timber Resources Management Regulations, 1998 (LI 1649). But due to price differential between domestic and export market it is more profitable for the companies to export and not to sell on the domestic market (Baffoe, 2009).

The low level of legal lumber supply by mills to the domestic market has created a vacuum in the domestic market resulting in high patronage of low priced illegal chainsaw timber supplied by the numerous chainsaw operators. To understand the gravity of the problem of supplying of legal sawn wood into the domestic market, one has to take the holistic view of the state of the forest and the timber industry in Ghana.



2.7.1 The Overview of the Ghanaian Forest and Timber Production

The forestry sector in Ghana consists of government and private entities involved in administration, management, development, and utilization of forest and wildlife resources (MLF (1996).

Generally, the principal institutions in the forestry sector of Ghana comprise of the state sector institutions, logging and wood processing companies and forest-land owners.

According to Blackett and Gardette (2008), the Ministry of Lands and Natural Resources has the overall responsibility for forests, however the executive power vested in the

Forestry Commission makes it responsible for policy coordination, forest management and regulation of its utilization.

Ghartey (1989) as cited in Baffoe (2009) Ghana has established 266 forest reserves, 216 of which occupy 1,634,100 hectares in the high forest zone (MLF, 1996). Based on the results of forest inventories in Ghana, forest reserves are classified according to their conditions. Permanent protection areas consisting of 353,000 hectares (22% of the total forest area), there is also timber production areas covering 762,000 hectares (47% of the total forest area), Convalescence (repeatedly logged areas that require at least one rotation period to regenerate naturally) areas consisting of 122,000 hectares (7% of the total forest area) and lastly Conversion (areas under conversion into plantations) consisting of 397,000 hectares (24% of the total forest area).

ITTO (2005) observed that good management practices are executed in many of the forest reserves but for some of them, inadequate controls of the concessions have allowed overcutting due to frequent re-entries and salvage permits. Besides the permanent protection areas where harvesting is not allowed, timber is generally harvested from outside forest reserve areas, the timber production areas, the convalescence and conversion areas, a practice that causes fluctuations in size of the various categories.

2.7.2 Timber exploitation in Ghana

The Ghanaian timber industry represents one of the most important industrial sectors in the domestic economy. In 1989 the timber industry produced more than 10 percent of the gross domestic product and timber exports ranked third in foreign exchange earnings behind cocoa and minerals (Attain, 1991).

According to Ghana's Timber Export and Development Board (TEDB, 1990), foreign exchange earnings from timber exports were almost US\$ 135 million in 1990, providing approximately 13 percent of total foreign exchange earnings for Ghana.

After decolonization, the exploitation of timber started to expand in Ghana due to the introduction of road, railway and the timber trucks. This happened all in combination with the worldwide growing demand for hardwood timber for building construction.

These days many free-lance traders came to Ghana to set up business within the timber trade with western investment, these companies started to expand into bigger sawmills and logging companies.

The Ghanaian economy had reached a state of virtual collapse between 1980-1990 caused by falling cocoa prices, inflation and political instability (World Bank, 1989).

In response to this the government launched in 1983 the Economic Recovery Program (ERP). The ERP caused a serious expansion of the timber exploitation and the export of logs because it was one of the fastest ways to earn foreign exchange. The revenue from timber exports increased from 16 million dollars in 1983 to 100 million dollars in 1988 (Blackett and Gardette 2008). Another program that encouraged the rise in export of timber was the Ghana Investment Code of 1985. This code provided forest concessions to entrepreneurs and investors. It also included a 25 percent reduction on export taxes for lumber and value added products (Amanor, 1999). This was a reason for many Western companies to invest in the Ghanaian timber industry. By 1990 Ghana had lost more than 80 percent of its original forest cover (From 8 million hectares into 1.6 million hectares) (www.illegal-logging.info).

Stimulated by many local environmental activist and Western NGO's, the government of Ghana made policy shifts from encouraging the rapid exploitation of the forest for timber, to forest conservation through increasing domestic value-added in the processing of wood products to ensure effective control of illegal forest activities (Birikorang, 2001).

2.7.3 Policies put in place by the Government to check exploitation of timber

Log Export Ban (**LEB**). As a strategy for reducing excessive timber exploitation from dwindling forest resources and to encouraging downstream domestic processing, Ghanaian Government put a ban on the export of round logs in 1995. In order to maintain business, large numbers of log exporters became millers, as a result of the ban on the log export. The resultant effect of this was the increase in industry capacity from 2.5 million cubic meters in 1999 to 5.1 million cubic meters in the same year (Birikorang, 2001).

The motive behind the ban was to reducing the rate of exploitation of forest resources and to stimulate growth of wood processing firms active so that more value added products can be exported to ensure more revenue from exports of timber products.

In the view of Vonamsberg (1998), the LEB is a policy tool aimed at promoting domestic processing and increasing exports of higher-value wood products or manufactured goods.

Apart from having a high value-volume ratio, and for that matter low material input, downstream processing has the potential to reduce the rate at which the forests are exploited.

According to Lane (1998), cited in Resosudarmo and Arief (2006), the LEB policy was introduced to protect the remaining forest resources from over-exploitation and to present the future generation with the opportunity to benefit from the forest resources.

Although the log export ban has contributed to job creation in Ghana due to promotion of downstream processing, it is amply clear that it failed to achieve its primary objective of reducing pressure on the forest resource base.

Satellite pictures of state managed forest reserves taken in 1990 and 2000 demonstrated a rapid deforestation within the reserves (Hansen, 2007). The total timber industry continued to grow, official estimates suggest that logging was proceeding at about four million m³ per year which is four times the sustainable rate (Hansen, 2007).

Management Certification System Project (FMCS) is another policy put in place by the government and the development partners. It was set up in accordance with the countries forest certification process in 1996. This was aimed at producing forest products that will be widely accepted by the trade partners especially the European market. The European Union and the Dutch government provided support to establish it, but the project could not be sustained due to difficulties in funding (Bird *et al.*, 2006).

Forest law Enforcement, Governance and Trade (FLEGT) is also a policy put in place by the government and the European Union to protect the forest against illegal logging. It was published in 2003 and the aim is to establish Voluntary Partnership Agreements (VPAs) between European Union and interested timber producer states or FLEGT partner countries (EC, 2004). This will both provide an agreed method of guaranteeing the supply of legal timber onto the European market and open the way for the EU to help producer countries improve the quality of their forest governance (Brown *et al.*, 2008).

The Action Plan was the start of a process that places particular emphasis on governance reforms and capacity building, supported by actions aimed at developing multilateral cooperation and complementary demand-side measures designed to reduce the consumption of illegally harvested timber in the EU and ultimately major consumer markets elsewhere in the world.

The Action Plan identifies the setting up of a licensing scheme as a measure to ensure that only timber products that have been legally produced in accordance with the national legislation of the producing country may enter the Community, and stressing on the fact that the licensing scheme should not impede legitimate trade. The Action plan consist of seven broad areas committed to combating problems of illegal logging and its trades emphasizing on governance reform and capacity building of partner countries (EC, 2007)

2.8 Social Capital

Social capital lends itself to multiple definitions, interpretations, and uses. Halpern (2000) argues that multiplicity of uses of social capital has led to a many definitions and has been defined by many sociologists to reflect the subject under discussion.

2.8.1 Definitions of Social Capital

Fukuyama (1997) defined social capital as the existence of a certain set of informal values or norms shared among members of a group that permit cooperation among them. Putnam (1995) also defined social capital as features of social organization such as norm and social trust that facilitate coordination and cooperation for mutual benefits.

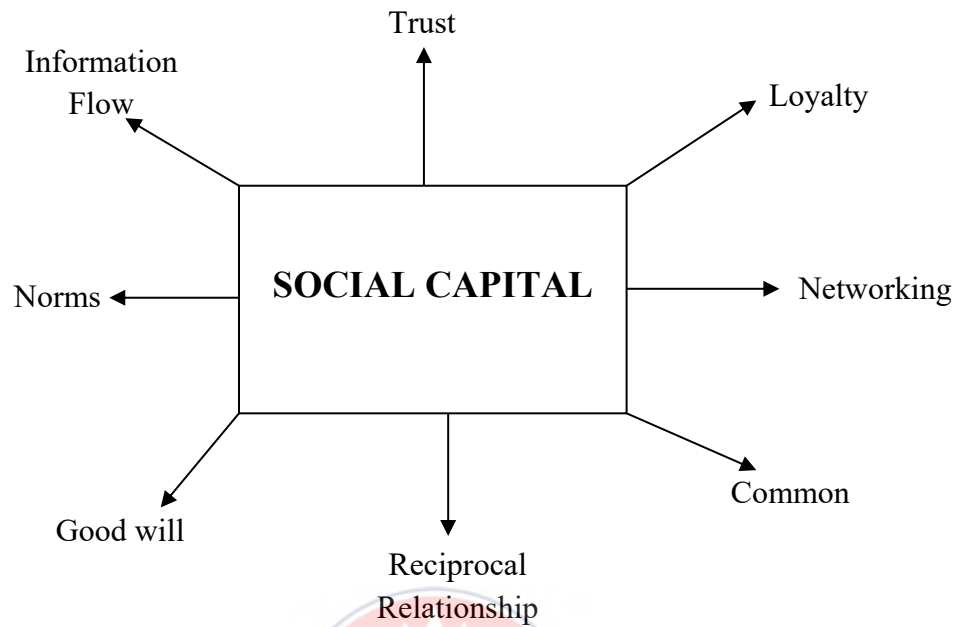
Bourdieu (1983) on the other hand stated that social capital is ‘the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition’. The World Bank (1999) maintains that Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society’s social interactions. Social capital is not just the sum of the institutions which underpin a society, it is the glue that holds them together.

2.8.2 Conceptual Framework of Social Capital

According to Smyth (2004), a conceptual framework illustrates a broad set of ideas and principles taken from essential fields of enquiry that are used to structure a subsequent presentation. Hence, it scaffolds research and assists the researcher to make meaning of successive findings. As basis for carrying out this research, the concept of social capital is used as a key concept, defined by Robert Putnam (Putnam *et al.*, 2000), as a ‘stock’ that is the property of a group or community, district or even nation and constitutes features of social organization - “networks, norms, loyalty and social ties that facilitate coordination and cooperation for mutual benefit.

Ferragi (2010) concluded that institutions and the society as a whole can benefit immensely from social capital if social issues such as trust, social norms, and participation in networks, reciprocity, proactivity and commons are given the needed attention.

Figure 1s: Conceptual framework of social capital



2.8.3 Participation in network

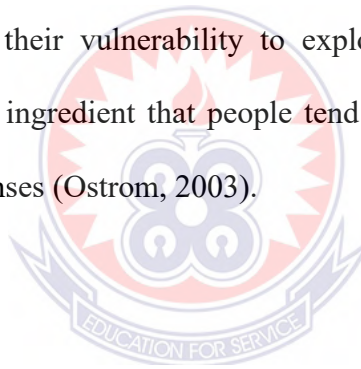
Key to all uses of the concept is the notion of more or less dense interlocking networks of relationships between individuals and groups. People engage with others through a variety of lateral associations. These associations must be both voluntary and equal. Social capital cannot be generated by individuals acting on their own. It depends on a propensity for sociability, a capacity to form new associations and networks (Zaheer *et al.*, 1998).

2.8.4 Reciprocity

Social capital does not imply the immediate and formally accounted exchange of the legal or business contract, but a combination of short term altruism and long term self-interest (Taylor, 1982). The individual provides a service to others, or acts for the benefit of others at a personal cost, but in the general expectation that this kindness will be

returned at some undefined time in the future in case of need. In a community where reciprocity is strong, people care for each other's interests. In this source, trust develops in part as the result of an interpretation of both exchange partners regarding his or her counterpart's motives and intentions for the exchange goals (Morgan and Hunt, 1994). The factors affecting this source are communication and understanding of the relationship.

According to Axelrod (1984) reciprocity is an essential characteristic of strategies capable of sustaining social cooperation. Reciprocal strategies punish defection by changing the likelihood of future cooperation in response to the current defections of others, thereby reducing their vulnerability to exploitative strategies. All reciprocity norms share the common ingredient that people tend to react to the positive actions of others with positive responses (Ostrom, 2003).



2.8.5 Trust

Trust entails a willingness to take risks in a social context based on a sense of confidence that others will respond as expected and will act in mutually supportive ways, or at least that others do not intend harm, in an organization, not only is interpersonal trust necessary but also interorganizational trust may be significant within the roles and routines of the organization (Ring and Van de Val, 1994).

2.8.6 Social norms

Social norms provide a form of informal social control that obviates the necessity for more formal and institutionalized legal sanctions. Social norms are generally unwritten

but commonly understood formulae for both determining what patterns of behavior is expected in a given social context, and for defining what forms of behaviour are valued or socially accepted. Some people argue that where social capital is high, there is little crime, and little need for formal policing. Where there is a low level of trust and few social norms, people will cooperate in joint action only under a system of formal rules and regulations. These have to be negotiated, agreed to, litigated and enforced, sometimes by coercive means, leading to expensive legal transaction costs (Fukuyama, 1995).

2.8.7 The commons

The combined effect of trust, networks, norms and reciprocity creates a strong community, with shared ownership over resources known as the commons. The commons refers to the creation of a pooled community resource, owned by all and used by all. The short term self-interest of each, if unchecked, would render the common resource overused, and in the long term it would be destroyed. Only where there is a strong level of trust, mutuality and effective informal social sanctions against "free-riders", can the commons be maintained indefinitely and to the mutual advantage of all.

2.8.8 The forms of social capital

Carlos (2000) claimed that social capital can be considered in terms of three fold: structural, relational and cognitive social capital. The structural dimensions of social capital relates to an individual ability to make weak and strong ties to others within a system. The relational dimension focuses on the character of the connection between individuals. This is best characterized through trust of others and their cooperation and the identification that an individual has within a network.

The cognitive dimension focuses on the shared meaning and understanding that individuals or groups have with one another. Putnam (2000) also put social capital into two groups, these are bonding and bridging social capital. Bonding social capital turns to reinforce exclusive identities and maintains homogeneity undergirding specific reciprocity and mobilizing solidarity while serving a kind of sociological superglue in maintain strong in-group loyalty and reinforcing specific identities. Bonding social capital tends to be exclusive by nature, it usually attracts alike members who have one or more similar interest in common, for example professional association, individuals in these group are likely to come from similar background with equal levels of education and income.

The bridging social capital involves bringing together people across diverse social division which creates effective linkages to external assets and information diffusion, this type of social capital provides a mechanism that can generate broader identities and reciprocity (Putnam, 2000). The civil society groups are example of bridging social capital, they aim to attract various audiences, regardless of their backgrounds and are used for information distribution. Members in this group differ in their background and income levels as well as education.

Woolock , 2001 on the other hand suggested another dimension of social capital, that is the linking Social capital, he urges that bonding and bridging social capital exist within the horizontal dimension, which is shared among people with common demographic characteristics. He suggested that the linking Social capital is the vertical dimension that is able to reach out to unlike people in dissimilar situation such as those who are entirely outside the community.

2.8.9 Social capital, from concept to measurement

Like human capital, social capital is difficult, if not impossible, to measure directly; for empirical purposes the use of proxy indicators is necessary. Years of education and years of work experience have a long tradition as proxies for human capital and have proven their value in numerous empirical studies. No such acquired consensus yet exists for the study of social capital and the search for the best proxy indicator continues. The measurement challenge is to identify a contextually relevant indicator of social capital and to establish an empirical correlation with relevant benefit indicators (Lecomte and Krishna, 1997). One critical challenge is that these social capital indicators differ both geographically and sectorally. For example, measures of membership in associations were found to be a relevant indicator in Indonesia, Kenya, and countries of the Andean region, but not in India and Russia, where informal networks are more important (Lecomte and Krishna, 1997). Thus, the selection of the proxy variables in the case studies were inspired by the specific manifestations of social capital in the study area, or the specific vehicles (associations, social networks) through which social capital is acquired.

Some rely primarily on membership in networks as a measure of structural social capital while others use the number and types of relations among members as their main indicator Putnam (1993). There is also the use of indicators such as trust between members of organization to measure the prevalence of social networks and the patterns of social interaction among them. To try to measure the cognitive dimension of social capital, neighborhood trust index is used. A combination of indicators can be used to study structural and cognitive social capital.

Structural social capital is proxied by associational activity, while cognitive social capital is proxied by measures of trust and the strength of norms of reciprocity and sharing beliefs (Carlos 2000).

The choice of indicators to measure social capital is also guided by the scope of the concept and the breadth of the unit of observation used (Grootaert and Narayan, 2000). This ranges from within-community local groups to supra-community federations and to national level entities.

At the other end of the spectrum, the studies by Colletta and Cullen (2001) examined the role of social capital in preventing ethnic conflict. They focus on the macro dimension of social capital and rely on national-level indicators such as the ethnic composition of the population and indicators of conflict and governance. These indicators are used either at the village level for case studies or at the national level for cross-country comparison and analysis.

Clearly, a wide range of social capital indicators are available and have been used in many case studies to measure social capital and its impact. Each of those measures has merits in the specific context in which it was used. Due to the strong contextual nature of social capital, it is unlikely that it will ever be possible to identify a few “best” indicators that can be used everywhere. However, one can suggest three broad classes of indicators which can usefully underlie the quantitative analysis of social capital.

Political competition and literacy have a significant and positive association with both development outcomes. Demographic characteristics and household attributes, such as education, wealth, and social status, are systematically associated with the level of social

capital within households. In contrast, several community attributes reflecting participation and experience in dealing with community problems positively affect the social capital index. However, the largest increments in social capital occur where beliefs in participation are reinforced by the existence of rules that are clear and fairly implemented. This is a good example of the mutually reinforcing role of structural and cognitive social capital Putnam (1993).

2.8.10 Benefits of Social Capital to Actors of Wood Cluster industries

The first benefit that social capital provides to the actors of a cluster is access to free information. For the actors, social capital facilitates the access to broader sources of quality information, relevance and timeliness. Coleman (1988) urges that network ties help actors to gain access to information about job opportunities. The information access of social capital has been also noted to play a vital role in an interorganizational unity and innovations. Powell and Smith-Doerr (1994) reviewed that interorganizational networks help firms acquire new skills and knowledge.

Uzzi (1997) contends that social embeddedness allows firms to exchange fine-gained information and the transfer of fine-gained information among firms helps them to better forecast future demand and anticipate customer preferences.

Influence, control and power constitute another kind of benefit of Social Capital to the actors of industry, Such power benefits allows the actors to get things done and achieve their goals due to the high level of trust and cohesion between the members of the cluster. Burt (1992) focuses on the power benefits that accrue to entrepreneurs who bridge disconnected groups. Because these entrepreneurs have a say in whose interest are served

by bridge, they can negotiate terms favorable to those interest and thus become powerful actors. The power obtain from social capital can be used by entrepreneurs to negotiate with government to effect policy direction of nations.

The third benefit of Social Capital to industry clusters is solidarity, strong social norms and benefits associated with a high degree of closure of the social network encourage compliance to local rules and customs, strong shared norms benefits from lower monitoring cost and higher commitment. Nelson (1998) states that frequent interaction between groups permits faster dispute resolution and prevent the accumulation of grievances and grudges reduce the need for formal controls.

Ouchi (1980) argues that clan type organization with strong shared norms benefits from lower monitoring cost and higher commitment. Another contribution of social capital to the development of industrial cluster is the alleviation of risk of doing business and opportunism (Granovetter, 1985&Gulati, 1995).The norms, trust and strong cohesion binding the members of cluster due to the social capital reduce the risk which can promote sub-contract among the actors.

2.9 Challenges of the wood Clusters industry

The first of the challenges is the Supply of legal wood into the local wood market, which has seen a downward trend over the last decade and has brought about shortage of wood in the cluster. Mensah (2002) urges that the sawmills in Ghana targeted the export market given a very little percentage of wood to feed the local wood industries. It is also known that the annual allowable cut (AAC) which stands at two million cubic meters (2 million m³) is woefully inadequate for both local and the export market and this is also a

contributing factor to the shortage supply of wood to the local market. According to TEDB in 2005, only about 42,000m of lumber instead of required 500,000m from 79 designated companies and others supplied legal lumber to the domestic market in fulfillment of Regulation 36 of Timber Resources Management Regulations, 1998 (LI 1649). The wood industry has been mainly export-oriented due to price differential between domestic and export market which makes it more profitable for the companies to export and not to sell on the domestic market with the domestic market virtually neglected and depended on illegal chainsaw lumber. There is a high, unsatisfied demand for lumber on the domestic market for building construction and furniture production. Supply of adequate legal volume and quality lumber to the domestic market remains a major challenge. The continuous declining of the supply of wood for the local wood industries has brought about increase in price of wood since the demand is more than the supplying thus affecting the final price of wood products making it less competitive.

Secondly, the issue of marketing of wood product is another challenge that confronts wood cluster members. Schumacher, 1965 urges that problem of finding adequate market is inevitable since there is stiff competition from China and Europe, poor publicity and the made in Ghana syndrome. There are a lot of furniture products from China into the local market and because they have access to modern machines and technology their products have very good finish as compared to the local ones. Therefore the local wood products are not able to compete. Globalization creates a market for cheaper imports that easily substitute for domestic goods (Torgerson and Hamrick, 1999). It is also on record that many of the members do not have showrooms to showcase their products in order to attract consumers, again high percentages of them do not advertise their products either in

the prints or the electronic media to attract the public due to financial constrains. They do not also have the resources to take part in exhibitions to make their products known to the general public. Another disturbing issue affecting the marketing of the products from the cluster is the Ghanaian taste for foreign goods to the neglects of the local ones.

The slow pace of economic development in Ghana has affected the pace of development of national infrastructure. Services such as electricity, transportation, water and telecommunication are very critical or necessary for the development of industries (Okpara and Wynn, 2007). Cluster members have challenges with the continuous and unreliable supply of electricity and water. Many of the machines used by the cluster members depends on the electricity to work and this means whenever there is power off it means the members cannot work. There is also lack of good roads to aid them in the movement of their goods to and from the cluster. The cluster also has problem with good sanitation facilities, since there are no well constructed site for the disposal of the waste and residues from the cluster. As a result of this the environment in which they work is engulf with sawdust and other waste which creates a lot of insanity condition especially during the raining season.

Furthermore, low level of education is a serious challenge confronting the wood cluster industry, most of the artisans are not well educated and as a result their knowledge level is very low, many of them acquired their training through apprenticeship with no formal education. The cluster requires more talented technicians and engineers, who can come out with new designs which currently are not available in most clusters, but with today's global knowledge revolution, firms and industries are rapidly becoming more knowledge and technology intensive. Accordingly, their means of production and operation are also

becoming increasingly knowledge-based (Drabenstott, 2001). With regards to internal challenges, there is still the problem of management incompetence on the part of artisans as managers of their firms. This deficiency has resulted in the failure of many firms. Some of the actors lack management skills, financial knowledge, and expertise in other functional areas such as marketing and human resource (Lightelm and Cant, 2002). In Ghana, a lot has been achieved with regards to the provision of training and advisory services to entrepreneurs, even though there is more room for improvement. This requires an increasingly intensive acquisition, adaptation, and use of knowledge and technology throughout their processes to enhance productivity and efficiency. One of the key challenges of entrepreneurs in the developing world is access to credit and the wood cluster industry is not an exception, (Pissarides, 1999; Stanworth and Gray, 1991; Storey, 1994). According to Kyanula and Quartey (2000), access to finance remains a dominant constraint to entrepreneurs in Ghana and other African countries. Access to finance has been identified as the most important factor which determines the growth and development of entrepreneurship and small business in Ghana and other developing countries (UNCTAD 2000; Ayeetey *et al.*, 1995).

Accelerated economic growth and development will not be possible without a deepening of the financial system and more support from the banking system in particular. In Ghana, however, the banking systems are not providing enough financial support to the expansion of small businesses (Sacerdoti, 2005). Financing has, thus become a dominant constraint to small business in Ghana (Abor and Biekpe, 2007). Related to access to finance is the cost of credit in Ghana and other developing countries. The lack of access to long term credit to small businesses has resulted in small businesses relying on high

costs of credit, relatively high bank charges and fees and high collateral requirements (Pissarides, 1998). Doing business in Ghana, therefore, has become very difficult and expensive. Thus, even where financial facilities are available, the interest rates and other charges from the banks have made it almost impossible for small businesses to borrow for investment (Berger and Udell, 1995).

There is also a weak link between wood cluster industries and educational institutions. The educational institutions of state providing skilled personnel in most cases are not able to produce the personnel with the right man power requirement of industries, and therefore their contribution is limited owing to poor-quality and mismatch between skill supply and market demand (Otigba, 2002). For example, even new graduates from national institutes of technology, such as Wood Industry Training Center (WITC), Ghanaian foundation, polytechnics, and universities were not viewed as sources of knowledge in some clusters. Again universities and technology institutes are not deeply involved in firms' technology and innovation activities. This may be traceable to weak demand from the private sector and the limited capacity of the universities and technology institutes.

Again the support from governmental and state institutions established to help private sector growth is weak as compared to other aspect of the economy. The government must create an enabling environment in the wood cluster to ensure its growth and development. Beyond providing some basic infrastructure and training, the government needs to build and to establish a favorable regulatory and incentive-based to make the local industries more competitive (Oyelaram-Oyeyinka, 2001). This is not just an issue of defining policies, but of implementing them to the advantage of the firms. For example the

government can put in place tax on imported wood products such as furniture doors and cabinets to make the local furniture more competitive in the market.

The least said about international market, the better. Entrepreneurs in Ghana and the developing world have found it difficult to compete on the international market. The fact still remains that some of these entrepreneurs have virtually not been able to sell anything abroad. This is because domestic challenges do not allow them to operate at a lower cost. This makes the prices of their products higher than those coming from abroad. Ghanaian entrepreneurs are thus not internationally competitive. Consequently, the Government of Ghana and African Development Foundation (ADF) would have to joined forces to develop, increase competitiveness and profitability of entrepreneurial firms in Ghana.

Equipment and technologies that are in use currently by small businesses in the developing world and Ghana for that matter are too old to aid innovation (Parker *et al.* 1995). This challenge, just like some of the aforementioned challenges is linked to the financial challenges of entrepreneurs. The inadequacy of financial capital of entrepreneurs makes it difficult if not impossible for them to acquire the needed technology and equipment even if they are available.

From the above analyses we can see that the challenges facing the wood clusters industry are many and the survival of technology-based clusters depends on how effectively the clusters can absorb and apply new technologies and adopt advanced knowledge-management practices to improve their overall competitiveness.

2.10 Financial and Managerial supports available to the Actors of Clusters

In Ghana, available data from the Registrar General indicates that 90% of companies registered are micro, small and medium enterprises. This target groups have been identified as the catalyst for the economic growth of the country as they are a major source of income and employment (Aryeetey *et al.*, 1994).

Despite the potential role of SMEs to accelerate growth and job creation in Ghana, a number of bottlenecks affect their ability to realize their full potential. SME development is hampered by a number of factors, including finance, lack of managerial skills, equipment and technology (Anheier and Seibel, 1987; Aryeetey *et al.*, 1994; Gockel and Akoena, 2002). Based on the above mention challenges and others, the government of Ghana and the development partners have put in place a number of programmes and institutions to assist the SMEs I the country.

2.10.1 National Board for Small Scale Industries (NBSSI)

The government of Ghana in 1985 established the National Board for Small Scale Industries (NBSSI) for the promotion and development of SMEs. The activities of NBSSI fall into two broad categories, financial and nonfinancial services. The financial services activities include extending credit through its loan schemes to entrepreneurs for both working capital and acquisition of fixed assets. NBSSI has offices in all the ten regional capitals in Ghana working under the Ministry of Trade and Industry. As part of their core mandate, they provide skill training to artisans in various fields, they also liaised with some NGOs to provide management skills to entrepreneurs in areas such as book and records keeping, simple accounting and how to write business proposal. In

fulfillment of its mandate of credit provision to SMEs, the Board of NBSS1 in 2010 facilitated access to credit for seven hundred and fifty five (755) SMEs in Ghana (Okine, 2011).

2.10.2 Skill Development Fund (SDF)

The Skills Development Fund (SDF) is the latest launched financial support for medium and large businesses across the country. The grantees, drawn from industries, science and technology, educational and research institutions are supposed to develop innovative technology to solve challenges in their respective industry. The Fund is an initiative of government of Ghana with assistance from development partners such as World Bank and DANIDA. The fund is to be managed by the Council for Technical and Vocational Education and Training (COTVET). The World Bank and DANIDA have so far supported the Fund with \$50 million credit facility and a \$10 Million grant respectively. The beneficiaries included Precious Minerals Marketing Company, KNUST Jewelry Design and Technology Centre, Ghana Rice Inter Professional Body, and Wood Cluster Initiatives. So far a total of GH¢15 million have been granted to 40 SMEs nationwide. The Fund is aimed at strengthening the productive capacity, competitiveness, income levels and employment creation in the country.

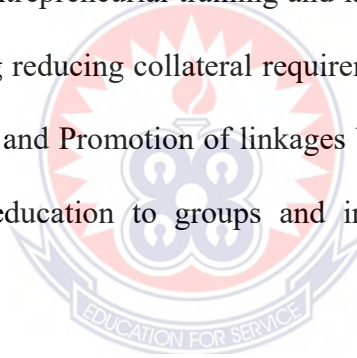
2.10.3 Micro Finance and Small Loan Centre (MASLOC)

Various governments over the years have put in place many Micro Finance Schemes to give financial aid and business advices to the SMEs to help them develop and employ the youth in the country. For example micro financing schemes such as Micro Finance and Small Loan Centre (MASLOC), Venture Capital Trust Fund and Export Development

and Investment Fund (EDIF) are all supporting agents put in place to help SMEs Growth and Development (Mensah, 2004).s

2.10.4 Ghana Regional Appropriate Technology and Industrial Service (GRATIS)

Another supportive structure put in place to provide an appropriate technology and innovation to small firms and industries is the Ghana Regional Appropriate Technology and Industrial Service (GRATIS), a foundation that provides skill training and basic working capital tools for start-ups. The Policy interventions for the promotion of SMEs have generally had the following broad themes: Adequate supportive structure, transfer of appropriate technology, entrepreneurial training and labour skills development, access to sources of funds including reducing collateral requirements and providing safeguards for the credit delivery system and Promotion of linkages between large and small industries. GRATIS also provides education to groups and individuals on how to get certain machines and equipment.



CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter presents the methodology used for the conduction of the study. It gives a detailed description of the study population, sample and sampling techniques, data collection instrument and data collection procedure. The Chapter also discusses the data analysis plan employed for the study.

3.2 Research Design

The research design adopted for the study was descriptive survey with questionnaire to provide answers to the research questions. A review of literature and analysis of studies on the role of social capital on industrial clusters by Babur (2012), Yamamura and Otsuka (2003) supported the use of descriptive survey as the research design for the study. In addition, similar studies made the most use of researcher designed questionnaires for data collection (Read, 1986).

3.3 Population

The targeted population of the study consists of all artisans of Sunyani wood clusters, wood suppliers, machines operators, buyers of wood products and owners of shops that do sell furniture accessory in the cluster, food sellers in the wood cluster, agents of institutions and Government agencies.

The reason why this population was chosen stem from the fact that the wood cluster industry is managed by owners of these firms and they take various decisions that affect the cluster and as such hold the relevant information that are useful for the study.

The estimated population numbered 200 people from different specialties. The Sunyani wood cluster was chosen because of its accessibility coupled with the fact that a wider coverage would have been time consuming and expensive.

3.4 Sample and Sampling Procedure

The method of convenience sampling was employed in arriving at the 200 actors of the wood cluster. The list of all the members of the Sunyani wood cluster was obtained from their secretariat and the researcher visited the shops one after the other and explained to the owners what the study was about and the need for them to take part. Individuals who were willing were noted down to take part in the study. These were the firm owners who the researcher believed possess the experience relevant to this study and have sufficient time and were willing to participate (Morse, 1998). This technique, convenience sampling, involves obtaining responses within the sample frame from willing respondents and also their availability for the study. The advantage here is that respondents will participate on their own volition and not selected against their will. This technique was chosen to boost response rate because respondents in this sector are found to be reluctant in giving out information since they believed in one way or the other, information about their business such as sources of wood may leak through to the Forestry officials who will in turn harass them. The quality of responses was high as participants took their time to respond to the questionnaire.

3.5 Data Collection instrument

Both secondary and primary data were used in this study, the secondary data consists of literature review of the relevant theories on industry clustering and social capital. The Secondary data was collected using journals, textbooks, handbooks and manuals, review articles and editorials, literature review, informal discussions with experts, Seminars and conferences as well as published guides.

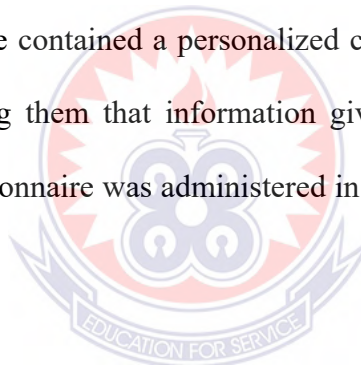
The primary data was obtained from surveys through the use of questionnaires, respondents used items in the questionnaire structured on a Five-Point Likert scale to answer the questionnaire. For example, improvement in productivity in the wood cluster used 1=not very improved, 2= not improved, 3= do not know, 4=improved, 5= very improve. Role of Social Capital as well as the challenges in the wood cluster industry also used the same style. Disagree=1, strongly disagree=2, don't know =3, agree=4, strongly agree=5.

To ascertain the main actors of the wood cluster, the participants were also asked questions including their demographics (age, educational background, number of years in business) and firm characteristics (e.g. number of employees, type of product manufacturing and the monthly income). In order to increase the internal and content validity of the constructs used to measure the role of Social Capital in wood cluster industries, the researcher first, made an initial draft of the questionnaire and it was pre tested informally. Based on the feedback, a few items were revised to improve better comprehension. The revised draft questionnaire was then piloted using ten (10) furniture producers and ten wood merchants within the Sunyani wood cluster.

3.6 Administration of Questionnaire

In order to ensure high response rate, and also to give assistance in the form of clarification to some of the respondents who might have some challenges to the understanding of the question, the researcher adopted a self-administered interview-based survey questionnaire to solicit responses (Robson 2011). The participants were also given enough time and space to reflect on each question item before providing their own responses to reduce the incidence of interview bias.

Furthermore, the researcher encouraged the participants to consult records that might help them provide accurate responses to the questions (Cohen, Manio, and Morrison, 2011). Each questionnaire sample contained a personalized cover letter, explaining the purpose of the study, and assuring them that information given would be treated with utmost confidentiality. The questionnaire was administered in July, 2013 and completed within a space of three weeks.



3.7 Data Analysis

The data analysis involved reducing the raw data into a manageable size, developing summaries and applying statistical inferences. Consequently, the data was gathered mainly through the use of questionnaire. The questionnaire was pre-coded before it was administered. The open ended items were edited for consistency after which codes were assigned to each of them. The codes were then defined and entered into the computer using the Statistical Package for Social Scientists (SPSS) software version 16. This was seen as appropriate because of its user friendliness. Descriptive statistics using mainly frequency, percentage, mean and standard deviation was employed analyzing the data.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter is devoted to the presentation and analysis of the results emanated from the study. The chapter is divided into the following sub themes: Actors of wood cluster industry, demographic characteristics of respondents, improvement in productivity in wood cluster industry, role of social capital and cooperation in the wood cluster industry and finally the challenges in the wood cluster industry. Frequency, percentages, mean and standard deviation were used to simplify the data to address research questions and the objectives of the study.

Research Question One

Who are the actors of the wood cluster industry and what are their characteristics?

Table 4.1 Actors of wood cluster industries

Actors of wood cluster	Frequency	Percentage %
Artisans	100	51.2
Wood merchants	30	15.0
Buyers	23	11.7
Marketers	20	10.2
Machine operators	12	6.1
Food Venders	5	2.6
Research and training Institutions	0	0
Financial Institutions	3	1.5
Government agencies	3	1.5

Source: Author's Field work, (July, 2013)

4.2 Actors of Wood Cluster Industries

According to Table 4.1 there were different actors gathered in the wood cluster area who perform different roles. Majority of the actors (51.2%) were mainly artisans, followed by wood merchants who constituted 15.0%, while marketers of various wood products constituted 10.2%. Operators of various machines were 6.1% of the respondents while buyers accounted for only 11.2%. There were also representatives of financial institutions who accounted for 1.5% while Government agencies were only 1.2 of the respondents surveyed. Food vendors on the other hand were 2.6% while no research and training institution actors were surveyed.



Table: 4.2. Demographic characteristics of actors of wood cluster industry

Variable	Frequency	Percentage %
Gender		
Male	178	90.8
Female	18	9.2
Age group		
20 years and below	0	0
21-30	16	8.2
31-40	119	60.7
41-50	45	23.0
51 and above	16	8.8
Educational level		
No formal educational	28	14.2
Primary	125	63.8
Secondary	36	18.4
Tertiary	7	3.6
Years in the wood business		
5 years and below	15	7.7
6-10	27	13.8
11-15	30	15.3
16-20	100	51.0
21-25	16	8.2
26-30	7	3.6
31- and above	1	0.5
Was your firm located elsewhere		
YES	128	65.3
NO	68	34.7
How long have you been in this cluster		
5 yers and below	122	62.4
6-10	68	34.6
11-15	6	3.0
16-20	0	0
21-25	0	0
Number of employees		
1-5	122	62.2
6-10	72	37.3
11-15	1	.5
16-20	0	0
21-25	0	0
Manufacturing products		
Furniture	119	56.1
Sawn wood	31	14.6
Doors and frames	27	12.7
Boxes	9	4.2
Roof	10	4.7
Monthly income (GHC)		
151- 450	18	9.2
451-700	41	20.9
710-1000	105	53.6
1001-1300	21	10.7
1301- and above	11	5.6

Source: Author's field work. (July, 2013).

4.3 Demographic characteristics of actors in wood cluster industries

The gender of the respondents was found to be heavily tilted towards the male population as indicated in Table 4.2. The males represented 90.8% of the actors surveyed while the females constituted 9.2% of the respondents.

On the age of the actors chosen for the study, majority of them were mainly within the age group of 31-40 years which accounted for more than half of the respondents (60.7%). This is followed by those within the age bracket of 41-50 years which also constituted over one-fifth (23.0%), however, those between 21-30 years were 8.2% while those above 51 years are 8.1% of the sample taken for the study.

The study revealed that the actors in the wood cluster industry have very low educational background as shown in the Table 4.2. More than half of the respondents (63.8%) were holders of basic education, those with secondary education represented 18.4% of the sample taken for the survey. Meanwhile those without formal education constituted 14.0% whereas those with tertiary education were just (7.0%).

The study again revealed that, the actors in the wood cluster have been involved in the wood business for quite a number of years. In as much as some of them were new in the business, a huge number of the respondents have been working for a significant number of years. It was clear that more than half of them (51.0%) have worked for 16-20 years, 15.3% have worked for 11-15 years, while 13.8% of the respondents had also worked for 6-10 years and 8.2% have been in the business for 21-25 years. Notwithstanding, 0.5% of the respondents have worked for more than 31 years and new entrance (five years or less) making up 7.7%.

The researcher wanted to know where the firm owners started their wood businesses before moving into the wood cluster and majority of the respondents (65.3%) were found to have operated elsewhere before relocated to the cluster. Meanwhile 34.7% started their firms in the wood cluster.

On the number of years they have worked in the cluster, more than half (62.3%) of the respondents were found to have been working in the cluster for 1-5 years, whereas 37.2% have been in their current location for up to 6- 10 years and only 0.5% have worked for 11-15 years.

The numbers of employees that work in the various firms were found not to be larger as a result of the size of the businesses (Table 4.2.). More than half of the respondents (62.2%) were having up to 1-5 employees, while 37.3% had between 6-10 employees. Moreover only 0.5% of the respondents had between 11-15 employees in their various firms.

In terms of product manufacturing among respondents, the study found out that there were several products being manufactured as a result of different artisans gathered in one geographical area. Over half of the respondents (56.1%) were mainly into the furniture production business while sawn wood accounted for 14.6%. Doors and frames production also recorded 12.7%. Notwithstanding, boxes production accounted for 4.2% and roof making was only 4.7% (table 4.2).

The monthly income of the actors was put under scrutiny by the researcher to find out how much they earn, the study revealed that most of the firm owners (53.6%) receive between GH¢710-1000 as monthly income, followed by those who receive GH¢ 451-700

who constituted 20.9% of the respondents. However only a few (5.6%) of the actors received monthly income above GHC1301.

Research question 2

How has the cluster facilitated the activities of the actors?

Table: 4.3 Improvement in productivity in the wood cluster industry

Variables	Improvement in productivity	Improve %	Do not know%	Remain the same %
Sales and profit margin	(M = 3.80 ; S.D =0.62)	84.3	4.1	11.6
Introduction of new products	(M =3.80 ; S.D = 0.620)	22.2	13.7	64.1
cost of production	(M = 3.91 ; S.D =0.46)	65.8	3.1	31.1
Number of artifacts produced	(M= 3.84; S.D =0.54)	74.7	8.2	17.1
Ability to purchase new tools and equipment	(M=2.94 ; S.D =1.04)	42.6	5.1	43.3
Access to new market	(M =2.98 ; S.D = 0.97)	56.7	12.	40.8
Using of new tools and equipment	(M=3.08;S.D=1.05)	40.8	15.3	43.9
Market price control	(M = 3.91; S.D =0.56)	86.3	6.6	7.1

Source: Authors' field work (July, 2013)

Improved: improved plus very improved, remain the same: not improved plus not very improved.

Scale: 1=not very improved, 2= not improved, 3= do not know, 4=improved, 5= very improved

4.4 Improvement in Productivity in Wood Cluster Industry.

The concentration of similar and related businesses in one geographical area has been found to facilitate the activities of the actors who form the cluster (Doeringer, 1995). Based on this, a number of questions about improvement in productivity were asked by the researcher to find out how the cluster has facilitated their operations since they joined the wood cluster industry.

Productivity variables such as sales and profit margins of firms, introduction of new products, cost of production, number of artifacts produced, ability to purchase new tools and equipment, access to new market, using of modern tools and equipment and finally market price control were used to find out how the cluster has facilitated their operations.

In terms of sales and profit margins, Table 4.3 shows the improvement in productivity in the wood cluster industry. Majority (84.3%) of the respondents agreed that their sales and profit margin have increased since joining the wood cluster. However, 11.6% of the actors asserted that sales and profit margin have remained the same. According to Table 4.3, only 4.1 % of the respondents appeared to be indecisive.

On the issue of new products being introduced, Table 4.3 indicate that not much improvement has been witnessed among the actors in the cluster as more than three –fifth (64.1) of the respondents thought introduction of new products have remained the same. Meanwhile a few of the respondents (22.2%) declared that introduction of new products have seen some level of improvement and 13.7% of the respondents showed indecision.

Touching on cost of production in the cluster, Table 4.3 shows that cost of production in the wood cluster was at its best as more than half of the respondents (65.8%) accepted

that production costs have reduced considerably. However, about a third of respondents (31.1%) showed that their production costs have not witnessed any reduction since joining the wood cluster, while a few (3.1%) expressed indecision.

On the number of artifacts produced, the study recorded that over two-thirds of the artisans (74.7%) agreed to the fact that they are able to produce more artifacts in the cluster than when they were outside. Only 17.1% of the respondents appeared to have a different opinion that they have not experienced any improvement in their production since joining the wood cluster. According to Table 4.3 8.2% of the respondent appeared they do not know as far as the views on the improvement of product quantity was concerned.

The ability of the actors to purchase new tools and equipment to help in the day to day work in the cluster did not record much improvement among the actors in the cluster. A significant number (43.3%) of respondents indicated that purchasing of new tools and equipment has remained the same. Meanwhile 42.6% of the respondents also stated that they are able to afford new tools and equipment more than when they were operating individually outside the cluster and 5.13% were undecided.

According to Table 4.3 access to new market on the other hand saw some positive change among the actors as shown in Table 4.3. As much as over half of respondents (56.7%) indicated they are able to enter other new markets, while, 40.8% of the respondents indicated that they are not able to penetrate other markets and just 12.2% showed indecision.

From Table 4.3, the usage of modern tools and equipment did not record any meaningful improvement as most of the respondents (43.9%) indicated that using of modern tools and equipment have remained the same, nevertheless a good number of the respondents (40.8%) also thought that usage of modern tools and equipment have seen some level of improvement in the cluster. Only 15.3% appeared to be silent on this issue.

The ability to control the prices of various artifacts sold in the cluster recorded improvement as indicated in Table 4.3. Most (84.3%) of the respondents were of the view that market price control is better in the wood cluster than when they were operating outside the cluster. On the other hand, 7.1% of the respondents stated market price control has not seen any change since joining the cluster while 4.1% also indicated they do not know.



Research question three

What have been the role of Social Capital and the level of cooperation in the wood Cluster industry?

Table: 4.4 Extents of Acceptance and Rejection with Improvement in Social Capital

Variables	Social Capital	Acceptance %	Do not know %	Rejection %
Trust	(M=3.88 ;S.D =0.59)	79.8	5.6	14.6
Reciprocal relationship	(M= 3.98 ; S.D= 0.44)	74.9	3.1	21.5
Information sharing on raw material	(M = 4.11; S.D=0.53)	65.1	1.0	33.9
Information sharing on new ideas and technology	(M=4.03; S.D=0.42)	71.3	3.1	25.6
Sharing of equipment with other artisans	(M =4.00;S.D=0.52)	64.5	2.4	33.1
Information sharing with colleague on market conditions	(M=3.96;S.D=0.59)	80.2	4.1	15.7
Maintaining social ties	(M= 3.87; S.D =0.72)	73.1	6.6	20.3
Subcontracting	(M =3.84; S.D =0.70	75.4	10.1	14.5
Artisans exchange	(M=3.62; SD =0.77)	70.5	20.9	8.7

Source: Authors' field work (July, 2013).

Acceptance: agree plus strongly agree, Rejection: disagree plus strongly disagree

Scale: disagree=1, strongly disagree=2, don't know =3, agree=4, strongly agree=5

4.5 Role of Social Capital and cooperation among the actors in the wood cluster industry.

The role of Social Capital in the wood cluster was measured using indicators such as trust among members, reciprocal relationships, information sharing among the members, sharing of tools and equipment with other artisans, maintaining social ties, subcontracting and artisans exchange. The results obtained are presented in Table 4.4

It could be seen from Table 4.4 that trust among the actors in the wood cluster was agreed by over two thirds (79.8%) of the respondents who were of the view that the level of trust among the actors in the cluster is far better than when they were outside the cluster. However, 14.6% of the respondents disagreed and stated that trust among the actors in the wood cluster still remained the same whereas 5.6% indicated they do not know.

In terms of artisan's exchange among the actors, Table 4.4 revealed that about two-thirds (70.5%) of the actors asserted that artisans are able to move freely from one firm to another to assist and to receive assistance, while 8.7% of the actors disagreed and they were of the view that exchanging of artisans has not seen any improvement with 20.9% of the respondents appeared to be indecision.

Reciprocal relationship among the actors within the wood cluster seemed to experience some improvement as most of the actors (74.9%) accepted that mutual respect for one another and cordial relationship in the wood cluster is better as compared to what is pertains outside the cluster. Notwithstanding about one-fifth (21.5%) of the respondents had a different opinions as they declared a total rejection for improvement in reciprocal relationship among the members in the cluster and a few (3.1%) of the respondents

indicated that they do not know of any improvement in reciprocal relationship as shown in Table 4.4.

According to Table 4.4, information sharing on materials among the actors in the wood cluster appeared to be very recommendable. Most of the respondents (65.1%) accepted that information on materials have been flowing freely among the cluster members, while 33.9% of the actors rejected to the notion that there is easy flow of information on material with a few (1.0%) of the respondents showing indecision.

Information sharing on ideas and technology like others witnessed a positive change from the perspective of the respondents. Most of the actors surveyed (71.3%) agreed that there had been spillover of technology and sharing of new ideas in the cluster, but on the contrary one-fifth (25.6%) of the respondents indicated that Information sharing on ideas and technology have remained the same ever since they joined the wood cluster. Furthermore, few (3.1%) asserted that they do not know of any improvement in sharing of ideas and technology within the cluster (Table 4.4).

Table 4.4 again revealed that it is easy and a common thing to see members sharing equipment with one another in the wood cluster as more than half of the respondents (64.5%) accepted that sharing of equipment with other artisans has witnessed a lot of improvement. On the contrary, 33.1% of the actors disagreed to this notion but stated that sharing of equipment among the actors has not experienced any change while 2.4% stated they do not know anything of the sort.

According to Table 4.4 the ease at which information on market conditions are shared among the members of the wood cluster appeared to have experienced improvement as

most of the respondents (80.2%) hold the notion that lot of improvement have been witnessed when it comes to sharing information on market condition in the wood cluster. However, 15.7% of the respondents seemed not in support of this claim but rather believed that information on market conditions have not seen much improvement while a few (4.1%) showed indecision.

Touching on maintaining Social ties as a way of measuring the role of social capital, about two-thirds (73.1%) of respondents had the view that social ties among the actors in the cluster is better than when they were outside the cluster, while 20.3% of the respondents appeared to differ in opinion and asserted that social ties in the cluster had not witnessed any improvement in the wood cluster and few of the respondents (6.6%) remained undecided.

In the case of Sub-contracting to other artisans, about three-fourth of the respondents (75.4%) accepted that there had been improvement in sub-contracting among artisans, meanwhile only 14.5% seemed rejected to the idea, while a few (10.1%) could not give an opinion

Research Question four

What are the challenges confronting the actors of the wood cluster industry?

In an attempt to find out the challenges facing the actors of the wood cluster industries, the research question below was posed by the researcher and the empirical data obtained is shown in Table 4.5.

Table 4.5: Challenges within the Cluster

Variables Challenges	Acceptance%	Do not know %	Rejection %
Access to credit facility (M =1.92 ; S.D =0.736)	27.3	10.5	62.2
Access to raw material (M= 1.79 ; S.D =0.609)	23.1	1.9	75.0
Adding value to resources (wood) (M= 1.69 ; S.D =0.647)	2.1	14.8	82.1
Promotion and marketing of products (M=1.87; S.D= 0.505)	19.4	10.2	70.4
Waste generated are put into good use (M =1.44; S.D =0.732)	20.9	3.6	76.4
Permanent site for production (M =3.22; S.D= 0.999)	62.7	11.7	25.6
Ability to control market price (M = 3.00; S.D =1.163)	50.3	11.2	38.5
Credit institutions charge low interest rate (M=1.77; S.D=0.536)	15.2	3.4	81.4
Regular supply of power (M= 1.37 ; S.D= 0.535)	14.4	1.5	84.1
Reasonable cost of utilities such as water and electricity (M=1.54; S.D= 0.496)	8.3	2.6	89.1
Good interactions between firms and training institutions (M=1.94 ; S.D =0.547)	4.0	10.7	85.3
Research findings are made available to firms (M= 2.05 ; S.D=0.609)	10.0	13.4	76.6

Source: Authors' field work (July, 2013).

Acceptance: strongly agree plus agree, Rejection: strongly disagree plus disagree

Scale: 1=strongly disagree ,2 = disagree , 3 =Do not know ,4 = agree , 5 strongly agree

4.6 Challenges of Wood Cluster Industries

Table 4.5 reveals the percentage distribution of actors in the wood cluster industries on the various indicators underlying the challenges they face.

It could be seen from Table 4.5 that easy access to credit from financial institutions appears to be a set back to the operations of the actors in the wood cluster as over three-fifth (62.2%) of the respondents did not agree that they have enjoyed easy access to credit. On the other hand, 27.3% of the respondents seemed to be of the view that access to credit has been very easy to them, with the remaining 10.5% undecided.

On the issues of access to raw materials (wood), the survey revealed that the actors in the wood cluster face some difficulties when it comes to having wood for their works as three – fourth (75.0%) of respondents stated that getting wood for their operations posed some difficulties to their businesses, nevertheless about one fifth (23.10%) of the respondents accepted that access to wood is not a challenge in the wood cluster and a few (1.9 %) declaring indecision (Table 4.5).

Adding value to wood resources also came out as a challenge to the actors as only few respondents (2.1%) accepted that addition of value to the wood resources has been easy and not a problem to them while most of the respondents (82.1%) showed that adding values such as kiln dry operation and preservatives to the wood remain a big challenge to them. According to Table 4.5, about 14.8% of the respondents appeared to be undecided as far as value additions to wood resources is concerned.

According to Table 4.5, promoting and marketing of new products were also seen as a challenge to the actors as most of the respondents (70.40%) expressed the opinion that

they are not able to market their produce, compared to a few (19.4%) of the actors who accepted that there have experienced some level of improvements in the promotion and marketing of their products in the wood cluster while 10.20% of the respondents stated they do not know.

With regard to the proper usage of wood waste generated in the cluster, about one-fifth (20.9%) of the respondents accepted that they are able to put their wood residues into good use. Meanwhile 3.6% of the respondents appeared to be undecided, while majority of the respondents (76.4%) indicated that proper use of wood residues generated in the cluster has not seen any improvement ever since they joined the wood cluster (Table: 4.5).

The charges and interest rate of banks and other credit institutions also came out as a setback to the actors in the cluster. According to Table 4.5, most of the respondents (81.4%) were of the view that the interest rates of financial institutions seemed to be on the higher side. Notwithstanding a few (15.2%) of the actors expressed their thought that interest rates on loans are low while 3.4% of the respondents remained undecided.

Regular supply of power into the wood cluster received a lot of disapproval as most of the respondents (84.1%) raised serious misgivings about the erratic power supply into the cluster (Table 4.5). Meanwhile, a few of the respondents (14.4%) expressed their acceptance to the way power is supplied in to the cluster and those who did not have anything to say about the issue were 1.50%.

Reasonable cost of utilities such as power, water and telephone services registered the disapproval of many respondents (89.3%). Only a few (8.3%) of the respondents

indicated that prices of utilities were reasonable while 2.6% stated they do not know (Table 4.5).

Table 4.5 also revealed that Good interactions between firms and training institution appeared to be challenge among actors in the wood cluster. Only 4.0% of the respondents accepted having interacted with the training institutions. It could be seen from Table 4.5 that about one-tenth (10.7%) of the respondents seemed undecided. Meanwhile most respondents (85.3%) were of the view that ever since joining the cluster they have not witnessed any form of interaction with the training institutions.

The non availability of research findings to firms was also found to be another challenge confronting actors of the wood cluster industries. According to Table 4.5, as low as (10.0%) of the respondents accepted that research findings were made available to them, notwithstanding, (76.6%) of the actors who constituted the majority stated that research findings are not brought into the notice of the cluster members. Meanwhile Members within the cluster who appeared to be silent were 13.4% (Table 4.5)

According to Table 4.5 all these recorded a low mean and a high percentage of rejection showing that these challenges exist among all the clusters members, nevertheless, issues such as permanent sites for production (Mean =3.22), recorded high acceptance of 62.7%, while undecided were only 11.7%, and rejection 25.6%. The ability to control the market (Mean= 3.0), acceptance was about half (50.3%) of the respondents, undecided were 11.2%, and rejection 38.5%. These were not found to be a challenge to them since their mean values were high and had a high percentage of acceptances.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

This chapter seeks to present the discussions of the major findings emanated from the results of the study as a way of addressing the study's objectives, and answer the research questions. The discussions are been done in relation to existing literature

5.2 Actors of wood Cluster Industries

From the results of the study (Table 4.1), it was revealed that there are many different actors in the wood cluster industry with majority of the actors (61.2%) being artisans who produced various wood product such as furniture, doors, frames and other wood products in the wood cluster. This finding appears to confirm the assertion by Boon (2011) that artisans specialized in various wood products such as furniture, doors, cabinets, etc constitute the core the actors of the wood cluster industry. However there are other group of actors who provide services and supporting roles such as suppliers of lumber and sown wood, operators of wood machine, truck drivers, marketers of various finished wood products, food sellers, Government agencies, Research and training institutions and representatives of financial institutions which were also identified.

These actors who provide services and supporting roles in the wood cluster are also known as related and supporting actors. They provide many important roles that facilitate the work of the artisans to produce the various wood products. This revelation also ties in well with literature as according to Porters (2009), the related and supporting actors are another key dimension of industrial clusters since their presence provides related and

supporting structures that suggest that spatial proximity of upstream and downstream industries facilitates the flow of information and promotes a continuous exchange of ideas and improvement in productivity. This means that in considering the issue of actors in any wood industry, the role of the related and supporting actors and the services they provide should be looked at since they have the potential to affect the success of the key actors such as the furniture designer in the wood cluster industry.

5.3 Demographic Characteristics of actors of Wood Cluster industries

The results of the survey (Table 4.2) showed that actors in the wood cluster industry are dominated by males (90.8%), with very few (9.2%) females. This result can be attributed to the physically demanding nature of the wood industry which has become a disincentive to female participation and this confirms the claim by Purnomo, Irawati, Fauzan & Melati (2012) who investigated the role of women in wood furniture production in Jepara District in Indonesia and concluded that there are few women in the furniture industry and their activities are considered to be weak and therefore paid less than men. The implication of this is that the design and provision of any supporting programme or policy to the development of the wood cluster industry should be geared towards the needs of the males so as to realize the desired impact on the industry

The educational background of the actors on the other hand is almost exclusively dominated by owners of wood cluster who have received non-tertiary education (86.5%) and a few (3.4%) having attained tertiary status as shown in Table 4.2. The low level of education has serious consequences on the efficiency and the ability of the artisans to handle sophisticated wood machines and to carry out any meaningful research to bring

about improvement and innovations into their operations (Bowe *et al*, .2001). This finding is in agreement with Zhihua (2010) who performed a study on the knowledge, technology and cluster growth of eleven (11) African countries and concluded that Suame cluster of manufactures in Kumasi has majority (75%) of it's artisans attained basic education and only (2%) have tertiary education. The consequence of this development is that attainment of efficiency and higher productivity which thrives on empirical findings on innovations in method of work and productivity would be greatly affected. Efforts should therefore be made by various stake holders in the wood cluster industry to come out with strategies to improve on the level of education of the members

In terms of age distribution, most of the actors aged between 31 and 40 years which constitutes the middle age group and the work force of society, while a few were above 50 years (Table 4.2). This development could be related to the nature of the work perform which is mainly associated with the working group who has the needed strength to withstand the laborious nature of the wood industry. However none of the respondents were found to be less than 20 years old. This finding appears to affirm the study of the Networks and Linkages in African Manufacturing Cluster by Oyeyinka (2001) in Nigeria that artisans in the manufacturing clusters in Africa are in the age bracket of 30-50 years who are able to provide the clusters with the needed strength and experience. It could therefore be suggested that the social and the psychological needs of such age group should be seriously considered any time development programmes are designed and implemented.

The number of years in which the actors have been in the wood business also gave an interesting revelation as most of the firm owners surveyed indicated that they have been

in the wood business for some good number of years (16-20). This has given them enough experiences such as how to establish good customer relationship which has positive impact on the ability of the artisans to come out with new products and high sales. This finding attests to the assertion by Amoah and Fordjour (2012) that when one stays in the furniture industry for a long period of time, he is able to establish long-standing relationship with many customers which increases its propensity to actively engage in new product development. This development is very positive because old firms are known to have gathered enough experience in terms of material selection, designs, technological adoption and adaption, and customer relations than new entrance.

Concerning the location of shops and movements into the cluster, it appears that majority of the artisans (65.3%) had their shops located elsewhere before moving into the wood cluster as indicated in Table 4.2. It thus becomes evidently clear that the cluster was able to attract many entrepreneurs because there are many related and similar businesses gathered at one geographical area. Furthermore, a free flow of information on new technologies, market conditions and networking are all found in the cluster, and are considered to contribute to the development and improvement in productivity. Finally, the wood cluster is cited close to the main Sunyani market and therefore many actors are attracted to the cluster due to the nearest to the source of market. This finding contradict with the theory by Fafchamps (2003) that furniture entrepreneur in Africa tend to locate their workshops in clusters where industrial peers from their own ethnic group have also located. The implication of this is that whenever a wood cluster is to be established, efforts should be made to look at opportunities available to attracted actors to the cluster so as to realize it economic benefits

The smallness of the various firms in the cluster was evident when the researcher requested the firm owners to indicate the number of employees they engage. The distribution of employees was found to be skewed with majority of the firms (62.2%) engaging at most 6-11 employees. This could be linked to the financial positions of the firms. The size of a firm is determined largely by the number of employees (Islam et al., 2011) and has effect on the efficiency, scale of operation and innovation of the firm (Šálka, Longauer, and Lacko, 2006). This is so because large firm size reflects assembly of large body of knowledge, skills, ideas and healthy competition among the employees that could positively impact on innovation and efficiency drives of the firms. This finding is consistent with the findings of Pitt and Lee (1981) in their study of Indonesian weaving firms. They concluded that efficiency, the scale of operation and innovation is affected by the size of a firm. This simply implied that for firms to be more innovative and efficient in their operations, they should be assisted to expand their businesses so as to employ more people.

In terms of product manufacturing among the artisans in the cluster, the study (Table 4.2) found out that there were several products being manufactured as a result of the different artisans within the cluster. Notwithstanding, majority of the respondents (56.1%) were mainly into the furniture production. The furniture producers were many in the cluster because according to the artisans, furniture production has market than the other products simply due to the fact that most District Assemblies as well as Nongovernmental Organizations (N.G.Os) supply schools with furniture every year and normally they fall on the cluster for their product them. This finding appears corroborate with the theory of Coleman (1991), who claimed that the furniture industry in 1981 contributed 55% of

value-added wood products in the wood industry. What this implies is that any move to support and develop the wood cluster industry, should give premium to the furniture industry as it holds a larger market share.

5.4. Improvement in Productivity

Regarding improvement in sales and profit margin as a measure of how the wood cluster facilitates the businesses of the actors, most (84.3%) of the respondents accepted that there has been improvement in the sales and profit margins of their products since moving in to the cluster. The causes of improvement in sales and profit margins could be attributed to the fact that the cluster has many artisans gathered at one geographical area who produce different kinds of wood products and are therefore able to attract many customers than what an individual artisan working elsewhere could do. This finding is consistent with the theory of Cortight (2006) who stated that due to the concentration, proximity and interdependence of clusters, the participants benefit a lot which can translate into improvement in productivity which might not be possible when they locate outside the cluster or operate independently elsewhere. The implication of this is that people and authorities in charge of developing small and medium scale enterprises in the wood industries should try more to encourage artisans to take advantage that clusters hold to their businesses.

The respondents were also asked if there have been improvement in new products development i.e. innovation in their productions. Most (64.2 %) of the respondents rejected that new product development have not seen any improvement. This was also confirmed by some of the artisans during the interview that though there is much

interaction, easy transfer of knowledge and skills within the cluster, not much innovation and new product development have taken place in the cluster. This finding can be attributed to lack of research and development activities in the cluster due to the low level of education of artisans and small firm size of the firms. This is supported by literature that development of new products development is greatly affected by the size of firms and the level of education of firm owners (Zhihua, 2010). The implication of this finding is that to improve on the propensity of the firms to engage in new product development, many educated artisans should be encourage to join the wood cluster so that they can help in research and development (R & D)

Again cost of production also saw improvement as shown in Table 4.3. Most of the respondents (65.8%) accepted that production cost have improved, the improvement in production cost can be attributed to the fact that the artisans are closer to each other with a lot of interactions between them to the extent that they share tools and equipment among themselves and even materials can be borrowed on credit. Whatever one needs in the cluster can be found and one does not have to go outside the cluster for machines, tools or materials hence reducing transportation cost and time to be spend in production. This finding confirms the theory by Humphrey and Schmitz, (1996) who claimed that rivalry although severe within a cluster does not prevent the firms or individuals to work together against a common problem to develop and upgrade to ensure improvement in productivity. This implies that actors in the wood cluster industries must work together to ensure that the needed materials and equipment are always available so that they would have a competitive advantage over those outside the wood cluster.

Another measure of productivity in the cluster is the improvement in the number of artifacts produced by the actors. Most of the respondents (74.7%) agreed that there have been accepted improvement in number of artifacts produce. This can be associated with the fact that the firms within the clusters principally benefit from competitive advantages like the pool of specialized workers, specialized suppliers and customers as well as specific infrastructure with tailored human resources which make production of various artifacts in the cluster more easier and faster than been outside the cluster. This finding also attests to the theory by Rosenfeld (1995) who maintained that firms in an industrial cluster enjoy the availability of "tailored infrastructure" as a key advantage when there is increased industries concentration in an area, individual businesses benefit from the development of physical infrastructure tailored to the needs of specific industries. The implication of this is that for the actors to realize fully how the cluster facilitates their operations, those who are in charge must put in place polices to help improve upon the basic infrastructure in the wood cluster.

The researcher wanted to know if the respondents are able to penetrate other market apart from the wood cluster, and almost (56.7%) of the respondents accepted to have access to other markets. This development could be explained by the fact that most of the actors who started their firms elsewhere before coming into the cluster are able to find other markets easily than those who started the wood business right from the cluster because of the already established networks they had outside the wood cluster. This finding attest to the claim of Megumi- Muto, *et al* (2011) who studied the role of space, infrastructure, human resource and Social Capital using Furniture Workshops owners in Arusha, Tanzania and came to a conclusion that furniture producing owners who operated

elsewhere before joining the furniture cluster are able to get other customers and market in addition to what is in the cluster. The implication is that networking and strong social ties between actors and communities around the wood cluster is very important for marketing of wood products and therefore members of the wood cluster must take advantage of that.

The usages of modern tools and equipment have not witnessed any positive change among the actors in the wood cluster. Majority of the respondents (43.9%) indicated that using of modern tools and equipment has remained the same.

This result can be attributed to the low level of education of the actors. One's ability to use modern tools and equipment depends largely on the educational levels of the individual and the skills of the person. Since it has been established that the actors in the cluster have very low level of education, it comes as no surprise if they are not able to use modern tools and equipment. A positive correlation between higher educational level and the ability to use higher technology tools and equipment has been established by Bower *et al* (2001). The implication of this is that for the artisans to be able to use modern tools and equipment, the authorities in the cluster must put in place a routine in-service training to expose the artisans to the use of modern tools and equipment.

The researcher wanted to find out if the actors are able to control the market price of their products as one of the means by which the cluster facilitates the activities of the actors. Majority (86.3%) accepted that they are able to control the market price. This can be attributed to the fact that artisans have many associations in the cluster such as doors and frames makers association, furniture makers association and machine owners associations

in the cluster, who are able to read the market indices, predict the way forward and hence fix their own price. Also due to high level of trust, cooperation and loyalty in the cluster, coming into compromise on any issue of mutual interest is easily achieved. This confirms the theory by Uzzi (1997) who contends that social embeddedness such as trust, cooperation and loyalty in industrial clusters allows exchange of fine-gained information and the transfer of these information among firms helps them to better forecast prices, future demands and anticipate customer preferences. The implication of this is that the actors in the wood cluster must work together to establish a strong cohesion and unity so that they would have a common voice to all issues of mutual concern.

5.5 Role of Social Capital and the Level of Cooperation in the Wood Cluster Industry.

In terms of trust among the actors, most of the respondents (97.8%) accepted that trust in the cluster has improved and this can be seen with the ease at which members are able to move from one firm to another interacting, seeking advices and having meetings with other members. The improvement in trust in the cluster appears to be as a result of the closeness of various firms in the cluster, the ease at which members share information and the manner at which actors give support to each other. This finding is in line with the theory of Ring & Van de Ven (1994) who contends that inter-organizational trust may be significant within the roles and routines of organizations to ensure ones willingness to take risks in a social context based on a sense of confidence that others will respond as expected and will act in mutually supportive ways. This means that trust is important to

ensure a conducive environment for businesses to thrive, therefore members should work towards earning the trust and loyalty of the others in the wood cluster industry.

Reciprocal relationships in the cluster are another way the role of Social Capital and cooperation in the cluster was measured. Many of the respondents (74.9%) accepted that there have been improvement in reciprocal relationships in the cluster, this finding can be explained as due to the closeness of similar businesses in the same area, it is easy for the members to offer help and to exchange ideas and resources. Additionally, the actors in the cluster establish relationships through various cluster meetings and other fora such as funeral and parties. According to Granovetter (1985) reciprocal relationship is important for the easy transfer of skills, technology and diffusion of information in an organization.

Information sharing is a very important attribute of strong Social Capital in an organization (Roelandt ,1998) , based on this questions were asked on information sharing on raw materials, new ideas and technology as well as market conditions. All these social capital variables saw improvement as shown in Table 4.2. It is worthy of note that 65.1% of the respondents accepted improvement in information sharing on materials while 71.3% accepted improvement in information sharing on new ideas and technology and 80.2% respondents asserted that information sharing with colleagues on market conditions have improved. The improvement in information sharing among the actors in the wood cluster is a very key indicator of strong social capital as it helps members to form network and foster unity among themselves. This development can be attributed to the concentration of many firms in one geographical area which has resulted in easy interaction, networking, access to free broader sources of quality information, knowledge

spillover which creates competitive advantage in the cluster. This finding attests to the theory by Uzzi, (1997) who contends that information flow in organizations allows firms to exchange fine-gained information and the transfer of fine-gained information among firms help them to better forecast future demand and anticipates customer preferences. An organization that can stand the test of time is the one that has a strong network and easy flow of information, therefore actors of wood cluster industries must do well to ensure easy flow of information in the cluster so that members can benefit fully for being in the wood cluster.

5.6 Challenges of the Wood Cluster Industry

The wood cluster industry like most S.M.Es in Ghana is bedeviled with a lot of challenges which is meditating against its' development as shown in Table 4.3. One of the challenges is having access to credit facilities and on this most of the respondents (62.2%) agreed that accessing credit from Banks and other financial institutions is very difficult. This is affecting the growth and expansion of the businesses of SMEs. Ayeetey *et al.*, (1995) concluded that the problems of lack of proper records of activities of firms makes it difficult for the banks to determine the real values of projects in other to provide the SMEs with loans. According to Quartey and Kyanula (2000), access to finance remains a dominant constraint to entrepreneurs , the lack of access to long term finance to small business has been identified as the most important factor which affects the growth and development of entrepreneurship and small business. Based on this finding it is implied that the actors of wood cluster industry should be trained on how to keep good

records of their businesses and establish a good relationship with the Banks so that they can get loans from the Banks to expand their businesses.

The next challenge that the survey identified from the wood cluster industry is the access to materials (Sawnwood). The supplying of wood into the local wood market has seen a downward trend which causes shortage of wood in the wood cluster. This challenge can be attributed to the fact that those who are mandated to supply legal wood for the local consumption in fulfillment of Regulation 36 of Timber Resources Management Regulations, 1998 (LI 1649), appears to neglect the local wood market for the export market due to price differential. This result attest to the claim by Mensah (2002) who reports that the sawmills in Ghana targeted the export market given a very little percentage of wood to feed the local wood industries. The implication is that the leaders of the wood cluster industry should join their financial resources together and have a negotiation with a big sawmill in the locality so that they can get a reliable supply of sawnwood.

Adding value to wood resources also came out as a challenge in the cluster. 82.1% of the respondents indicated that they are not able to add value to the wood resources. The reason for this result is that it appears kiln drying and preservative treatment facilities are not available in the cluster. Coleman (1991) however estimated that the wood industry requires an additional 180,000-200,000m³ of kilning capacity annually to enable it to achieve its objective of producing value –added wood products and to phase out air dried lumber. What this implied is that actors in the wood cluster industries must put their resources together so that they can acquire preservatives and kiln dry equipment in other to add value the wood resources.

The utilization of wood residues generated in the cluster is another challenge confronting the wood cluster industry (Table 4.5). Most actors (76.4%) were of the view that large volumes of wood residues such as sawdust, shavings, trimmings, rejections etc. generated in the cluster are not been put in to good use. Not only do they allow the wood residues to go waste but also it creates insanitary condition in the cluster during the raining seasons. This result can be attributed to the inability of the actors to find an appropriate technology to convert the wood residues into fuel to generate energy to power the industry. Mahendra *et al.*, (2011) conducted a study into the possibility of generating power from wood residues from the sawmill industries in Cuba and urged that sawmills have the advantage of being able to use their waste to generate heat and power by the use of different kinds of wood residues generated when taking down a tree and producing sawn timber. The implication of this is that more research should be conducted into the usage of wood residues so as to put them into good use.

Promoting and marketing of wood products produced in the cluster also came out as a challenge to the actors. Most of the respondents (70.4%) indicated that they are not able to promote and market their products and it appears only those who visit the cluster are the people who would get the chance to know what they have produced. It also means that most of the products are sold in the cluster and this problem appears to be as a result of the low educational level of the actors, their knowledge in marketing strategy is also low. This finding is consistent with the findings of Bowe *et al.* (2001) who concluded that a less educated manager may not have skills needed to make important marketing decisions or an appreciation for the need to access new marketing strategies. To help

improve the promotion and marketing skills of actors of wood cluster industries, members should be trained on regular basis to sharpen their marketing skills.

The study also found the interest rate and other charges of banks and other financial institutions to be exorbitant, it has already been reported that it is difficult to obtain loans from the financial institution. Even where financial facilities are available, the interest rates and other charges from the banks have made it almost impossible for small businesses to borrow for investment. This survey recorded 81.4% of the respondents showing their disapproval to charges and interest rates of Banks. A lot of SMEs are stagnant due to high interest rate on loans (Parker and Steel, 1995). The reason why small businesses in Ghana face challenges in securing funding can be partly due to the perception of high risk and high cost of intermediation for entrepreneurs, consequently they often cannot obtain long-term finance in the form of debt and equity to finance their businesses. Ayeetey *et al.*, (1995) Performed a study on the impact of the Ghanaian financial sector on the survival of SMEs and concluded that accelerated economic growth and development of SMEs will not be possible without a deepening of the financial system and more support from the banks to SMEs. To assist the actors of wood cluster industries to acquire loan which has low interest, the actors should be brought together as an association so that they can use the association to apply for loans from Government institutions such as MASLOC, NBSSI, and skill development fund that provide loans to SMEs at a very low interest rate.

Regular supply of power to the cluster is another challenge recorded as shown in Table 4.4. Most of the respondents (84.1%) were dissatisfied with the way in which power is supplied into the cluster. The unreliable nature of power has negative effect such as

reduced productivity and delaying in job completion on the activities of the firms since most of the machinery and the equipment use by the wood industry depends on electricity to function. A reliable power to firms has been found to reduce costs, improve efficiency, and stimulate growth for small businesses in Africa by Wamukonya *et al.*, (2005) who studied power sector reform in Africa and its impact on the poor people.

The challenges of the firms in the wood cluster go beyond funding, materials and utilities, but also training and manpower requirement. The educational and Training institutions are supposed to be at the forth front in the direction of providing the needed manpower development and innovations. It is therefore imperative to have Good interactions between firms and training institutions. According to Table 4.4, most of the respondents (85.3%) disagreed to ever having any interaction with the training institutions, although there are numerous training institutions such as Sunyani Polytechnic, National Vocational Training Institution (NVTI), Technical Institutions and Universities in the Sunyani Municipality. This result appears there is not much cooperation between the firms and the Training Institutions in terms of the needs of the firms and what the institutions can offer. There is seemed lack of information to link industries and the Technology institutions to direct their training towards the manpower requirement of industries to prevent a situation where products from these training institutions are not able to fit into the job market. This finding is in line with the theory of Otigba (2002) who maintains that due to lack of interactions between industries and training institutions their contribution is limited owing to poor-quality and mismatch between skill supply and market demand. To solve this problem the actors of wood cluster industries should collaborate with the training institutions in the locality so that students from these institutions can have their

industrial attachment in the wood cluster while the actors would benefit from the results of the researches they have undertaken.



CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMENDATIONS

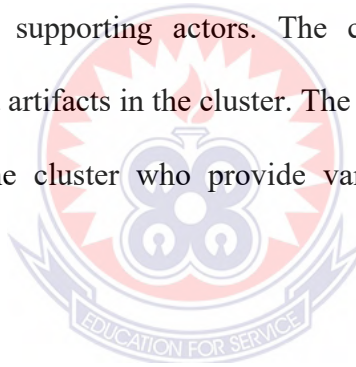
6.1 Introduction

This chapter presents the summary of findings, conclusion and Recommendations. Findings are presented in categories to answer the objectives of the study.

6.2 Summary of Findings

6.2.1 Actors of Wood Cluster Industries

The study found that, there are different actors within the wood cluster industry; these are the core actors and the supporting actors. The core actors are the artisans who manufacture various wood artifacts in the cluster. The supporting actors on the other hand are those members of the cluster who provide various services to complement the activities of the artisans.



6.2.2 How the cluster facilitates the activities of actors.

The study shown that, as a result of putting the actors together in the cluster, there were a lot of productivity improvement to many of the actors which indicates how the cluster facilitates the activities of the wood cluster members. Productivity variables such as sales and profit margin, market price control, reduced cost of production, number of artifacts produce and access to new market experienced a lot of improvement among many of the firm owners and these have positive impact on the businesses of the actors in the wood cluster. Notwithstanding some productivity issues such as using of modern tools and

equipment, introduction of new products and ability to purchase new tools and equipment were reported not improved to some of the actors, however other did not see it as such.

6.2.3 Role of Social Capital and cooperation in the wood cluster industry

Social capital in the wood cluster saw a general improvement of all the different social capital measurement used in the study. It was evident that social capital plays a very significant roles in the day to day activities of the actors in the wood cluster industry. This was seen as there was improvement in the level of trust among the members of the cluster which has resulted in the free flow of information on raw materials, market conditions, easy access to subcontract and exchange of artisans in the wood cluster.

It was also clear that improvement in social capital and cooperation have resulted in the formation and maintaining of social ties among the artisans, this has lead to easy sharing of tools and equipment among the actors, reciprocal relationships and transfer of new skills and technology in the cluster. These findings indicates the benefits the actors have derived as a result of social capital and cooperation among the members in the wood cluster industry. Therefore social capital has many positive roles in the wood cluster industry.

6.2.4 Challenges of actors in the wood cluster industry

The study revealed that, there are various challenges confronting the wood cluster members which were mainly agreed upon by many of the respondents.

These includes access to credit facility, access to raw materials, adding value to wood resources, promoting and marketing of new products, proper use of wood waste

generated, high interest rate, cost of utilities , non-availability of research findings to artisans, and non-existence of interaction between firm and educational institutions. These were found to be the challenges facing the cluster as they have merged in one geographical area.

6.3 Conclusions

Based on the findings of the study the following conclusions were made. The wood cluster industry consists of artisans who are the main actors that produce the various wood products. It also has non artisans who are the supporting actors who play complementary roles to help the artisans to manufacturing different wood products to the public. It was also evident that because various artisans and other actors are put in one geographical area, their activities have been improved. These benefits the actors derived for been in the cluster can be due to the closeness of the firms and the availability of tools and materials needed by the actors. In view of this industrial clusters facilitate the activities of its members and it is the surest way to improve upon the businesses of small and medium scale enterprises (SMEs).

The role of social capital from the survey is many, the study found that as a result of strong social capital in the cluster there were much improvement in cooperation between the actors in the wood cluster .These gains in social capital resulted in easy flow on knowledge and ideas, strong trust and social ties, networking and synergy of the actors, hence social capital has unified the actors and created a competitive advantage for the cluster members.

There were a number of challenges which were identified in the survey and all have adverse effects on the competitiveness of the actors in the cluster. These includes high cost of utilities and credit facilities which have negative effects on the final price of the wood products from the cluster hence making the products less competitive. There was very little innovation and new product developments in the wood cluster since research findings are not made available to artisans and also no interactions between firms, research and educational institutions.

A large amount of wood resources are allowed to go waste in the cluster due to lack of appropriate technology to put them into good uses such as generation of power and the manufacturing of chip boards.

Supply of wood into the cluster has reduced drastically due to low supply from the big saw mills because of price differential between local market and the export market which sometimes results in shortage of wood and high price of wood in the cluster.

Adding value such as kiln drying and preservatives to the wood resources does not occur in the wood cluster industry and the actors in the wood cluster do not take part in any promotional and marketing activities to expose their products to the public.

6.4 Recommendation

Based on the findings of the study, the following recommendations are made in order for the actors within the cluster to gain fully all benefits.

- a) It is recommended that, the executives or leaders in the cluster should organize regular seminars for its members, whereby personnel from technical and other research institute could be brought on board to educate members on the new

methods and the usage of new technologies and procedures to help them cut down cost.

- b) It is again recommended that, a program should be drawn by the leaders of the cluster to sensitize the public on the product and services available within the cluster.
- c) It is further recommended that the cluster executives should be able to establish strong ties with timber firms and sawmills in the area so that they can get sawn wood for their businesses.
- d) Finally members should be advised to save with the banks and keep accurate accounts of their transactions so that they can obtain loans from banks.



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APPENDIX A

Samples of machines used in the wood cluster.







APPENDIX B

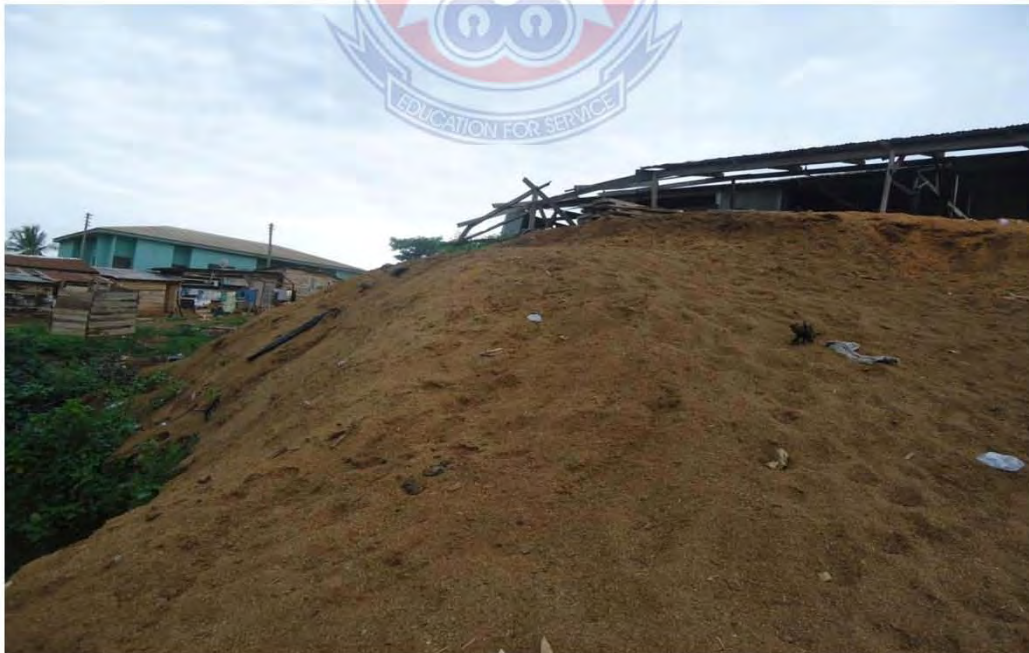
Section of shops in the wood cluster





APPENDIX C

Heaps of sawdust left to waste



APPENDIX D

UNIVERSITY OF EDUCATION, WENNEBA

COLLEGE OF TECHNOLOGY –KUMASI

FACULTY OF TECHNICAL AND VOCATIONAL EDUCATION

Assessing the role of Social Capital in Wood Cluster Industries

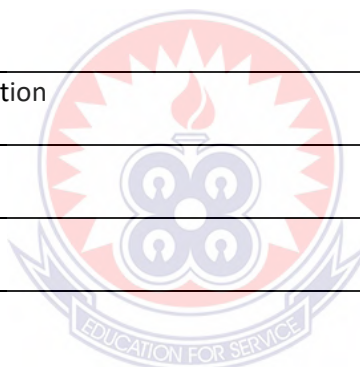
Questionnaire for actors of wood cluster industries

This research is undertaken by Mr. Amponsah Kwao Anthony, a final year student in Mtech. Ed Wood Technology. The research is aimed at assessing the role of Social Capital in Wood Cluster Industries in Ghana. This is part of the preliminary survey to provide information for the study.

The attached questionnaire is intended for actors in the wood cluster industry. You are invited to answer the questions to the best of your ability and be assured that all information provided will be treated with utmost confidentiality.

Thank you

Section A : Actors of wood Cluster industries	
Instructions: Please kindly select by ticking (√) what you do exactly in the wood cluster.	
ACTORS OF WOOD CLUSTER	
Artisans	[]
Wood merchants	[]
Buyer	[]
Marketer	[]
Machine operator	[]
Food vender	[]
Research and training institution	[]
Financial institution	[]
Government agency	[]



SECTION B : DEMOGRAPHICS CHARACTERISTICS OF ACTORS		
INSTRUCTION: From 2 -10 please kindly select by ticking (<input type="checkbox"/>) all that apply, which in your opinion Is the most appropriate answer to the questions.		
2 Your gender	Male [<input type="checkbox"/>]	Female [<input type="checkbox"/>]
3 Your age group	20 years and below	[<input type="checkbox"/>]
	21 - 30	[<input type="checkbox"/>]
	31 -40	[<input type="checkbox"/>]
	41- 50	[<input type="checkbox"/>]
	51 and above	[<input type="checkbox"/>]
4 Your educational level	No formal education	[<input type="checkbox"/>]
	Primary education	[<input type="checkbox"/>]
	Secondary education	[<input type="checkbox"/>]
	Tertiary education	[<input type="checkbox"/>]
5 How long have you been in the wood business	5 years and below	[<input type="checkbox"/>]
	6 - 10	[<input type="checkbox"/>]
	11 - 15	[<input type="checkbox"/>]
	16 - 20	[<input type="checkbox"/>]
	21 - 25	[<input type="checkbox"/>]
	26 - 30	[<input type="checkbox"/>]
	31 and above	[<input type="checkbox"/>]
6 Was your work shop located elsewhere before you moved to this wood cluster?	Yes	[<input type="checkbox"/>]
	No	[<input type="checkbox"/>]
7 How long have you been working in this wood cluster	5 years and below	[<input type="checkbox"/>]
	6 - 10	[<input type="checkbox"/>]
	11 - 15	[<input type="checkbox"/>]
	21 - 25	[<input type="checkbox"/>]
	26 - 30	[<input type="checkbox"/>]
	31 and above	[<input type="checkbox"/>]
8 What type of products does your enterprise manufacture? Please specified	Furniture	[<input type="checkbox"/>]
	Frames and doors	[<input type="checkbox"/>]
	Roof	[<input type="checkbox"/>]
	Sawn wood	[<input type="checkbox"/>]
	Boxes	[<input type="checkbox"/>]
	Bed	[<input type="checkbox"/>]

9 How many employees work in this firm	1- 5	[]
	6 - 10	[]
	11 - 15	[]
	16 - 20	[]
	21 - 25	[]
	26 years and above	[]
10 What is your monthly income	150 and below	[]
	151 - 450	[]
	451 - 700	[]
	701 – 1000	[]
	1001 -1300	[]
	1301 and above	[]



SECTION C : How the cluster facilitates the activities of the actors through improvement in the following productivity variables

Instruction: Please, kindly select an option by ticking (√) in the right box

		Very improved	improved	Cannot decide	Not improved	Not very improved
11	Sales and profit margins					
12	Introduction of new productions					
13	Cost of production					
14	Number of artifact produce					
15	Ability to purchase new tools and equipment					
16	Access to new tools					
17	Using of modern tools and equipment					
18	Market price control					

Section D : Role of Social Capital in wood cluster industries						
Instruction: To what extent do you think the following factors have improved since you joined this wood cluster?. Please, kindly select an option by ticking (✓) in the right column box						
		Very improved	Improved	Cannot decide	Not improved	Not very improved
19	Trust					
20	Reciprocal relationship					
21	Information sharing with colleagues on raw materials					
22	Information sharing with colleagues on new ideas and technology					
23	Sharing of equipment with other artisans					
24	Information sharing on raw market conditions and customers					
25	Maintaining social ties					
26	Sub- contracting					
27	Artisan exchange					

Section E : Challenges of wood Cluster Industry						
Instruction: To what extent do you agree or disagree with the following challenges of wood cluster industries?. Please, kindly select an option by ticking (√) in the right column box						
		Strongly agree	Agree	Cannot decide	Disagree	Strongly disagree
28	Access to credit facility					
29	Adding value to resources (wood)					
30	Promoting and marketing of new products					
31	Access to raw material					
32	Waste generated are put into good use					
33	Permanent site for production					
34	Ability to control market price					
35	Credit institutions charge low interest					
36	I have regular power supply					
37	Reasonable cost of utility					
38	Good interaction between firms and training institutions					
39	Research findings are made available to firms					