

# **EVALUATING THE SUPPLY CHAIN OF GHANA COCOA FROM A COMPANY POINT OF VIEW**

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## ABSTRACT

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Ghana is recognised globally for its cocoa cultivation and export worldwide. Cocoa is an essential contributor to Ghana's economy and as a nation at large. To regulate and oversee the trade of its cocoa business and all other things pertaining to cocoa as a commodity, the Government of Ghana established Ghana Cocoa Board (COCOBOD).

This paper aims to examine the supply chain activities of COCOBOD with a special interest on cocoa as a commodity for cross-border trading.

This research is done applying the qualitative method of doing research and is based on collected interview data from a selected sample working with the company in questions and supplemented with observational notes collected during an internship with the same company.

Some of the theoretical themes covered in this paper include the concept of business, supply chain management theory and looking into details the role of transportation and factors affecting transportation.

The findings of this research point to the all important role of the COCOBOD as a company in Ghana; but most importantly is their shipping activities and how any changes in these activities being it positive or negative has a direct effect on the affairs of the company and consequently for Ghana.

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Keywords: Cocoa, supply chain management, transportation

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## 1.0 INTRODUCTION

The term or concept Business is a broad topic that denotes economic activity which deals with the production and distribution of goods and services with a goal of ultimately satisfying human wants. Business can mean a simple thing as exchange of hand between two people to trade between two separate nations. It affects every aspects of the human society and it is business that makes things happen all over the world.

Business has always existed alongside human from the beginning where it was just the exchange of food or household items between friends and family, which is the batter trade. But like the human race, business has also evolved to now include financial interests to individuals, companies, and governments. This means as long as we human beings exist, business will continue to exist as a means of regulating economic interests around the world and also means that business is an activity done both locally and globally.

Finally business studies involve the study of different topics in different fields such as marketing, accounting, business finance and supply chain theory to mention a few. It is the latter concept, supply chain theory that is going to be treated more closely in this research paper. (Means 2001, 3-5)

As an international student studying international business at the Tampere University of Applied Science, the obvious choice for my bachelor's thesis when

it came time for it was to research on logistics, precisely supply chain as a topic. This decision is probably inspired by the five months internship I had as part of my studies at a company in Ghana called the Ghana Cocoa Board (COCOBOD). One can say therefore that this research paper is a result of the internship I had at this company; where I was fortunate to acquire some practical knowledge to add to what I had earlier on in my studies learnt on logistics.

Based on this practical experience I gained from COCOBOD, plus the theoretical knowledge I have acquired from my three and half years of studies; the obvious topic for my thesis is therefore: **Evaluating the supply chain of Ghana Cocoa Board**. My goal for this topic is to find out more about how supply chain activities are realized on a company level and in the case of this paper COCOBOD. In addition, I will be learning more about cocoa as a commodity which is the backbone of the Ghanaian economy in the process of writing this paper. I have already become familiar with how cocoa beans and its products are exported to generate revenue for the country Ghana

The study of the supply chain is not something new; this subject has been in existence for a long time and it's all the subjects in this field that has fueled my personal interest to also study this subject. To state as an example Noora Turpeinen, a polytechnic student from Rauma studied a similar topic for a company titles "Improving the internal supply chain from a case company

perspective-2009” and another by United States Agency for International aid on Indonesian cocoa titled “value chain case study- 2006”.

Companies involved in the international trade of commodities like cocoa have a demanding task of maintaining their source of supply as well as keeping their supply chain operations active at all times. This is because any problem in the supply chain can lead to losses in revenues for the company or government, especially if the commodity in question has a national interest.

Since COCOBOD as a company depends solely on cocoa as a commodity for its survival, I believe it is very essential to take a closer look at its supply chain activities the aim of this thesis. As mentioned earlier the problems in the supply chain often causes financial loss or breach in relations with suppliers. Moreover transportation is at the helm of its operation so I will be looking into transportation more closely.

Some of the issues covered in this paper include cocoa as a commodity for international trade, The Ghana Cocoa Board (COCOBOD), the government agency established to regulate the cocoa business and trade of Ghana. I will also be writing on business as a topic in general and what type of businesses there is, supply chain activities, the role of transportation and factors affecting transportation.

## 2.0 RESEARCH METHODOLOGY

### 2.1 INTRODUCTION TO METHODOLOGY

This research is done applying the qualitative method of doing research with data collected from interviews from employees of the company in question and personal observational notes from my internship period. These employees are selected from different departments in the company and asked the same questions to ascertain their opinions on the questions raised. The research method is a qualitative one because the study will be looking at how an operation in the company is affected by the actions of other activities in the company. For example how warehousing operations can automatically affect the relationship between the company and its suppliers.

This paper can be read in five different chapters, my aim in chapter one is to introduce the reader to this thesis paper and the subjects which are raised in it. The chapters two and three deals with the methodology and literature sections respectively. While in chapter four I analyze my work which finally leads me to draw a conclusion in chapter five.

With a personal background in logistics and an interest in the movement of products it is fascinating to know the process of supply chain, in which a product goes through from one point to the other. Like in the case of cocoa is often transferred from the farmer, LBC, COCOBOD to the manufacturer and finally on shelf as chocolate or beverage for the consumer. . The purpose of this research

is to study the supply chain activities of COCOBOD after undergoing internship there for five months. Knowing more about what the supply chain entails in practice will either confirm or not whether COCOBOD carries out its activities in accordance with what the dominant theories write on the supply chain process and whether employees are familiar with the activities

In the process of doing so, this paper will compare the supply chain activities written by experts in the field with the practices of the company. Since activities in a supply chain are like a wave they emit whatever is put in the chain, that is, all operations are affected when there is a glitch in the process. Aside from this issue, this paper will also be looking to answer the question as to;

1. What role does transportation play in the international trade of cocoa?
2. What are the factors that affect transportation?

## **2.2 RESEARCH METHOD**

According to Kumar (2008, 4), research methods are all the techniques used to conduct a research operations. The most common styles used are either quantitative or qualitative or mixtures of both and these methods used have a great influence on the research being conducted. Qualitative method is the style going to be used in thesis.

The term quality in the context of qualitative research refers to the way in which knowledge developed the corresponding attitude and behavior of the researcher, as well as the chosen methodology and kind of data. Qualitative

research is one in which the researcher makes an attempts to understand a specific organization realism and occurring phenomena from the perspective of those involved. The researcher tries to grasp the reality of occurrence in the organization inside out contrary to quantitative which is outside in. (Jonker 2010, 77)

Data collection for qualitative research is purposive and is based on the relationship the case has with the sampling group. (Glenn 2010, 96) This method of research is descriptive and inferential in character and primarily focuses on hard evidence that will enable one to understand the meaning of what is going on. (Gillham 2010, 10) In depth interviews, word association tests, sentence completion tests, story completion tests, observation are used to discover the underlying reason why people do what they do or why some things occur the way do. (Kothari 2004, 3)

The researcher is the primary instrument for data collection and analysis. Understanding is the goal of qualitative research, the human involvement enable it to be responsive and adaptive to reaction. Expansion of understanding occurs on the part of the researcher through nonverbal or verbal communication, processing of information and checking with respondent to clarify issue not understood. (Merriam 2009, 15)

According to Muijs (2011, 1) quantitative research is explaining phenomena by collecting numerical data that are analyzed by mathematically based methods particularly statistics. Measuring of numeric of specific aspect of a phenomenon to test a hypothesis is the prime objective of quantitative research. Samplings are carefully strategies to produce generalized results and researchers observe and measure so not to contaminate the results. (Thomas 2003, 2)

### **2.3 DATA COLLECTION**

As was said earlier, research methods refer to all the processes and instruments used in gathering information. The three most important processes are content analyses, observation and interviews. The instruments used are factual questionnaires, inventories of documents and test. (Thomas 2003, 57)

Content Analyses entail searching through one or more communications that the researcher brings to the search. Content analysis is not restricted to documents alone but extends to still photos, audio recordings and videos. (Thomas 2003, 57) Content analysis is measurement through fraction and frequency which looks at the intensity of the situation.

The analysis of content is a central activity whenever one is concerned about the study of the nature of verbal materials. A review of research involves the analysis of the content of the research articles published on a simple or subtle level. It is regarded simple when pursued on the basis of certain characteristics

of the document or verbal materials that can be identified and counted. It is subtle level when researcher study attitude. (Kothari 2004, 110)

Qualitative researchers utilize historical and anthropological background when collecting information from documents, records and artifacts. By so doing, they are seeking information about the behavior, experience, beliefs, knowledge, values and perceptions of the subject whose materials is being study in order to understand and describe the culture or institution.(Goodwin 1996, 137)

### **2.3.1 OBSERVATION**

Being alive render us natural observers of our everyday world and our behavior in it. What we learn helps make sense of our world and guides our future actions. Most of the things we observe are usually unconscious and unsystematic. Observation takes place in the setting where the phenomenon of interest occurs naturally instead of a location designated purposely for interviews. (Merriam 2009, 117) Observation becomes a scientific tool and a method of data collection for the researcher, when it serves a formulated research purpose, is systematically planned and recorded is subject to checks and control on validity and reliability.( Kothari 2004, 96)

Observation was included because; the researcher had his practical training in the company from July to November 2010 so experienced the way things are

done in connection with work. Unconscious I was observing thing though I did not know I was.

### **2.3.2 INTERVIEWS**

Conversation focused on questions related to a research study. (Merriam 2009, 87) Interviews may either be structured or unstructured; the later is described as been naturalistic autobiographical, in-depth, narrative or non-directive which is modeled on conversation. As it appears to be a social event, it has its own set of interactional rules which may be more or less precise. Interviews are process in which the researcher and the participant engage in conversation which sometimes becomes a learning process for the participants where the participants discover how the game is played in the cause of it. The interviewer is very adaptive to situation by adjusting to the participant to get the required response. (Blaxter, Hughes, Tight and Malcolm 2006, 172-173)

Interviews can be either one-on-one, with a focus group, over the telephone or email. The data being collected during interview might be in the form of jot down notes or record. In the case of this thesis, telephone interview was the initial form data was going collected. This research paper is based on data collected from informants, who are all staff members of COCOBOD but from different department within the company. The participants were sent open-ended formulated questions in advance through e-mail. This was done with the objective that they will have to familiarize themselves with the questions, after

which their answers or opinions would have given over a phone call. The interviews were planned this way because it is the most time cost efficient considering the researcher resides in Finland and the informants work in a company that is located in Ghana. However this is has not been easy to achieve because all informants were reluctant to talk on the phone after several phone calls. Because of this problem the participant were then asked to answer the questions in a written form. But even this has proved difficult and only two of the informants have responded.

#### **2.4 VALIDITY AND RELIABILITY**

According to Rubin et al 2010, 209 the idea of validity and reliability of a research is the same in both quantitative and qualitative though it mostly used in evaluating quantitative research. Qualitative research can employ validity and reliability in different ways. Validity and reliability are factors which any qualitative researcher needs to consider when designing and judging quality of a qualitative research. (Patton 2002)

The term reliability is a concept used for testing quantitative research; the idea is used in all kinds of research. (Golafshani 2003) Every qualitative research is planned to measure its own quality that is, to make people understand a phenomenon which might have caused confusion in the ordinary sense. This research may be lacking some consistency because most of the informants did not respond to the questions sent to them. The response was not enough to compare the views and ideas of other employees to create reliability. Credibility, consistency, neutrality and transferability are the best appropriate terms in qualitative theory. (Lincoln et al 1985)

Validity is the extent to which the researcher's findings accurately reflect the purpose of the study and its certainty; it also establishes the truth and authenticity of the research. The findings of this paper collated some ideas which are much like those of the experts though not all. (Holloway 1997, 159) It is very important in such a research so making it problematic in handling. Internal validity is regarded highly because researchers exhibit that they are presenting the exact information from the responses through the detailed description of the result. The ability to generalize the findings in any setting or location renders the findings externally valid. This study can be applied to any organization that is set up like the case thereby making the research valid

## 3.0 THEORETHICAL BACKGROUND

### 3.1 A GENERAL OVERVIEW ON BUSINESS

Business is an organization designed to provide goods and services or both to consumers. Businesses are dominant in capital economies, these are economies that believe the fuels of growth of the economies originate from these businesses and the wealth of a nation is determined by the number of these private enterprises. Businesses may be for profit or not-for-profit and usually owned privately or by multiple individuals.

There are different types of businesses categorized by the form of ownership and the law that binds them that is;

- ❖ Sole proprietorship is the type of business which is owned by an individual and whose main objective for operation is for profit. The operational of the business is solely dependent on the owner and in the instance of their demise; the business comes to a halt since they are the mangers and the all in all of the business.
- ❖ Partnership on the other hand is profit oriented and the ownership is by two or more individuals that may be friends, families or colleagues. In this kind of business the partners are liable to the same extent that is the contribution of partners was done equally which binds their personal property and in cases of debt, partners personal assets are sold to pay off the debt incurred by the business.

- ❖ Cooperation is limited liability business that has a set of laws surrounding its operations. It can be privately or government owned, privately owned cooperation could be for profit or not-for-profit. Shares are floated in the stock markets for the public to buy shares so they become the owners of the company. It's the shareholders who elect the board of directors and they are answerable to the shareholders about the performance of the business. Government-owned co operations are established to perform distinct commercial activities on behalf of the government. It could also be publicly owned through share floatation and the objective is to increase profit and dividends for shareholders but the board of directors are elected by the government. ([www.wikipedia.com](http://www.wikipedia.com)) As COCOBOD is a government owned limited liability cooperation all its operational decisions are directive from government in power and the managing director is assigned his post by government. They are involved in business to business transaction where cocoa beans are sold to local and international companies.

Businesses are also categorized by the extent of its operation which can be either domestic or international. Domestic businesses are those businesses that operate within the borders of a country. Their objective is to produce goods and services for the market in which they operate. So time and effort is spent on

studying the trends of this market to serve them better and all that is produce is sold in this market or warehoused for later distribution.

While international business is any business entity whose operation crosses national boundaries which can be private, governmental or a mixture of the two, the world of business in the twenty-first century has expanded to a great extent in the globe. (Ajami et al 2006, 4) International business can be divided into four (4) types: foreign trade, trade in service, portfolio investment and direct investment.

In foreign trade, physical goods or commodities move between countries as export and import. Exports are goods that leave a country of its origin while imports are those brought across national borders into a country. Exports and imports compromise the most basic and usually the largest international business activity in most country. COCOBOD operations revolve around the trade of cocoa beans to other countries as export.

Aside tangible goods, countries trade in services as insurance, banking, hotel, consulting, travel and transportation. The international firm is paid for the services renders in another country where the earnings can be in the form of fees or royalties. Fees are generated through the satisfaction of specific performance requirements which can be earned through long or short termed contract agreement such as management or consulting contract. Royalties

accrue through the use one company's name, trademark, patent and process by someone else. This is mostly as a result of goodwill since the name, process, trademark and patent used commands a large market share so the person would like to associate with this company.

Portfolio investments are financial investment made in foreign countries. The investor purchases debt or equity expecting financial return on investment. This form of investment involves buying shares or stocks in the foreign country and these investors are mostly represented by an investment companies which managers their investment and advices them. In portfolio investment, the investor has no commitment to resources, time, personnel and equipment for the running of the venture in the foreign country.

Direct investments is when a company invest directly within foreign land, it makes a real commitment of capital, personnel and assets domestic borders. Commitment of resources increases profit potential of the company by providing greater control of cost and operation of the foreign firm. It is accompanied by increase in the risk of operating in foreign country and environment. As with other forms of international activity, direct investment runs a continuum from joint venture in which risk is shared just as returns, to wholly owned subsidiaries, in which companies have the opportunity to reap rewards but must also shoulder the lion's share of the risk. Companies go international for these

reasons to get access to a larger market and take advantage of cost differential.

(Ajami 2006. 4-6, 27)

### **3.2 HISTORY OF GHANA COCOA BOARD**

Due to the significant contributions cocoa makes to the economy of Ghana, the government in 1947 established Ghana Cocoa Board (COCOBOD) by ordinance. This company then is the sole agency responsible for the development of the cocoa industry with an initial capital of 27 million cedis. COCOBOD has designated purchasing authority to local agencies called license buying companies (LBC's) to buy the cocoa on their behalf at a fixed market price from farmers.

The mission of the Board is to encourage and facilitate the production, processing and marketing of good quality cocoa in the most efficient and cost effective manner, As well as maintaining the best mutual industrial relation with its objectives.

Cocoa Board has five independent subsidiaries. Each subsidiary is tasked with a particular obligation to enhance the growth of the cocoa sector. Although these departments are independent they each render accounts to the mother company, Cocoa Board.

**i. Quality Control Division (QCD):** QCD is the division tasked with the responsibility of maintaining the quality of Ghanaian cocoa and other crops

exported. Since cocoa beans from Ghana is the yardstick by which all cocoa beans are measured due to high content of theobromine making is the best for quality chocolate. As mandated by the Board, the grading and sealing of cocoa start right from the doorstep of the farmer when the moisture content meets the standard required by the division. Sheds and warehouses are inspected on regular basis by staff of QCD to carry out disinfestations to rid the sheds and warehouses of insect and rodents. International standard require, beans should be free from foreign materials, odour and breakages and so QCD is always inspecting and examining the state of beans from the farm to the takeover centres

ii. **Cocoa Marketing Company (CMC):** CMC is the sole exporter and seller of Ghana cocoa beans to its customers and trade partners around the world. The United Kingdom branched is there to support the parent company in terms of trade, logistics and financing activities. Aside that the purchasing of the beans internally is in the hands of LBCs who have been mandated to buy on behave of COCOBOD. LBCs buy cocoa beans at the minimum producer price set by producer price review committee then evacuated to the takeover centres which might be Tema port, Tarkoradi port and Kaase. CMC intend buy the beans from the LBCs and stacked in warehouses and fumigated while waiting to be shipped.

**iii. Cocoa Research Institute of Ghana (CRIG):** CRIG carries out research into problems relating to cocoa, coffee, kola, sheanut and other indigenous oil tree crops which produce fats similar to cocoa butter. It then provides information and advice on issues relating to the production of the crops. CRIG conduct research in seven (7) scientific divisions and is organized on multi-disciplinary basis.

**iv. Cocoa Swollen Shoot Virus Disease Control Unit (CSSVDCU):** Is responsible for the survey and control of cocoa swollen shoot virus disease and the units are also into the control of the disease by removal and destruction of trees infested with the disease from farms then provides farmers with swollen shoot disease resistant hybrid for planting. The head office is in Accra with regional offices in all the six cocoa growing regions. Extension Field Assistants (EFAs) work on the basis of a four-week work cycle. They have divided their areas of control into sixteen sub-units, each with approximately equal number of cocoa farmers.

The farmers in each sub-unit are visited on one specific day in the four-week cycle (e.g. on the second Tuesday of every month, which to the farmers would be known as every fourth Tuesday). The schedule of visits is established taking into account local market and taboo days. For most of the weeks one day is left unscheduled so that any missed visit can be made up. In addition to these scheduled and unscheduled visit days, one day in each four-week cycle is for in-service training of EFAs.

Once the program of an EFA has been established it is made known to all farmers in his jurisdiction and remains unchanged. The purpose of such a programme is to ensure that each extension worker systematically covers all farmers and locations in his area. Farmers know when the extension worker is to visit them and supervision of the EFA's work is made easy. There is adequate flexibility to make up for missed visits and EFAs receive frequent guidance and training. EFAs do not sell or distribute farm inputs, though they are involved in monitoring the demand and supply of inputs.

**v. Seed production Unit:** The Unit is responsible for the multiplication and distribution of improved cocoa and coffee planting materials to farmers. It maintains seed gardens at twenty-two of the twenty-four cocoa stations for the multiplication and supply of improved planting materials (cocoa and coffee) to farmers.

The high-yielding early bearing hybrid cocoa types developed by the Cocoa Research Institute of Ghana have been multiplied and supplied to farmers as seed pods. ([www.cocobod.gh](http://www.cocobod.gh))

### **3.3 HISTORY OF COCOA**

Cocoa is a recurrent tree crop of the moist tropics cultivated mostly under the shades of the forest. Cocoa a cash crop traded all over the world for currency. According to the web site of cocoa board, cocoa originated from the headwaters

of the Amazon in South America. Its production and value spread in ancient times through Eastern and Central Amazonia and northwards to Central America then to Spain and the rest of Europe. It arrived in parts of West Africa in the 19<sup>th</sup> century.

Records available indicate that Dutch missionaries planted cocoa in the coastal areas of the then Gold Coast in 1815, whilst in 1857 Basel missionaries also planted cocoa at Aburi. However, these did not result in the spread of cocoa cultivation until Tetteh Quarshie , a native of Osu, Accra who had travelled to Fernando Po to work there as a blacksmith. He returned in 1879 with Amelonado cocoa pods and established a farm at Akwapim Mampong in the Eastern Region. Farmers in the area bought pod from him to plant which help the spread of the cultivation of cocoa in the in the Akwapim and the areas of the Eastern Region.



Figure 1 Cocoa Tree

Sir William Bradford Griffith the then governor of the Gold Coast in 1886 arranged for cocoa pods to be brought in from Sao Tome, from which seedlings were raised at Aburi Botanical Garden and distributed to farmers to cultivate.

There are currently six cocoa growing areas in Ghana; namely Ashanti, Brong Ahafo, Eastern, Volta, Central and Western regions. The common characteristics of these areas are tropical climate of moderate temperature, high humidity, and heavy rain fall. ([www.cocobod.com.gh](http://www.cocobod.com.gh))



Figure 2 Cocoa growing regions of Ghana

Cocoa has been making a lot of significant contribution to the economy and development of Ghana since it was introduced in the country. At a point in time Ghana was the largest producer of cocoa in the world but today it is the second largest after Cote d'voire with about 14 percent of the world production. In 2009 about 508, 000 metric tons of cocoa was exported at estimated value of \$1.4 million. (Bank of Ghana)

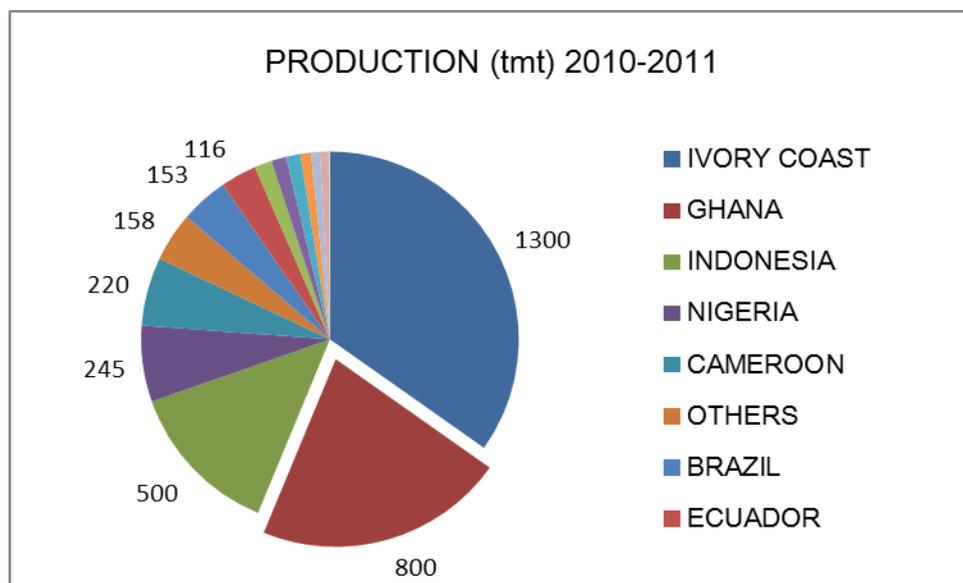


Figure 3 World Cocoa Production (Worldcrops.com, 2011)

### 3.4 SUPPLY CHAIN MANAGEMENT IN THEORY

The days when customers and client had no choice but to accept what was available has long gone. It is a great deal for organization to meet their customer requirements and eventually satisfy them, because the competition is so keen that others are ready to reach out for these customers. So organizations invest and put a lot of effort into their in-house activities to always be ahead of customers expectation through Research and Development,

Marketing, Accounting, production, supply chain management etc. because is a chain of actions so whereby when one of the above mentioned finishes its duty is where another starts its duty and vice versa in the case of a mistake. These activities are operated so closely all targeting the customer satisfaction not like the days of old when such functional department saw themselves as superior over the other and where not concern about what happens in the next department. In view of this we will be looking at the functional activities of supply chain.

According to Jespersen et al 2005, supply chain management is the integration and management of supply chain organizations and activities through cooperative organizational relationships, effective business processes and high levels of information sharing to create high-performing value systems that provide member organizations sustainable competitive advantage. The width of the supply chain of an organization depends on the extent of its operations and the kind of products it deals in. The events below throw more light on the supply chain activities carried out in an organization.

### **3.4.1 WAREHOUSING**

Warehousing is the storage of goods according to Coyle, Bardi and Langley (2002, 284, 285) and it was in the past strategically used for long-term storing of raw materials and finished products. Before a product ends its life cycle at one point of the cycle it is warehoused that shows the importance of warehousing.

With the introduction of just-in-time, strategic alliances and logistics supply chain; warehouse has taken a new dimension of attaining logistics goals of shorter cycle times, lower inventories, lower costs and improved customer services. Today's warehouse is no longer for long-term storage facility but activities are fast paced to the extent that goods may be stored for few days to couple of hours.

Warehouse serves as the link between the suppliers, manufacturer, customers through combining inbound materials and distributing them to production plants at the appropriate time. Warehousing helps marketing to serve customers and expand into new markets and at the same time helping customers to buy on demand without nearby production plant. It also balances supply and demand fluctuation in situation where supply exceeds demand; goods are stored to meet future demand and vice-versa in cases where demand exceeds supply, warehouse speed up the movement of goods to customer by performing additional services like marking price, packaging, or subassembly. (Bloomberg et al 2002, 172)

Operating of warehouses come in two forms, that is private or public. Private warehouse are normally owned by the organization that produce or own the goods the idea is to store the goods until delivered or sold to the customer. There is high utilization of the facility thereby increasing the economies of scale which clarify in maintaining lower or high profit margin products. Private

ownership provides a great deal of control of the physical product through reduction of theft and damage. Owners of this facility can lease out surplus space. In the case of COCOBOD, warehousing starts from the shed of the License buying companies till the beans are evacuated to the takeover centres of Tema, Takoradi and Kumasi. Upon reaching these centers, the beans are received by warehouse managers into the warehouse sheds through counting to see if the quantities match those on the way bill. The received beans are then stacked in the warehouse separated from the other beans to be fumigated for a forth night, after these days they are ready for shipment.

While public warehouses rent space to individuals or firms who need storage for their wares, mostly these firms are those with less need for big space so there is no commitment on capital investment to build one and also a firm is venturing in a new market where sales are not predictable. (Bloomberg 2002, 176) Public warehouse provide variety of service to those using their space which range from packaging, labeling, testing, inventory maintenance, local delivery, data processing and pricing. Aside these services provided by public warehouses, warehousing can be for general merchandise form where assorted goods are stored but standardized. There are cold warehouses targeting frozen foods, bonded for tariff exemption for the time being. Managers of these facilities take responsibilities for all that happens in them but with some tied to the leaser. Some products have effects on other product stored in a common storage like car tires cause other products to change colour.



Figure 4 Warehouse stacked with cocoa

COCOBOD uses public warehouse like Tarzan around the Tema takeover centre to house the excess cocoa beans which cannot be accommodated in the takeover centre. The warehouse owners are paid to use their warehouse shed and security of the beans are in their care since they will account for every single bag of cocoa. In the event of shipment, the shipping manager writes a requisition to the warehouse manager for allocation of beans for shipping. The warehouse responds and tells where the loading will be done, whether Tema, Takoradi or Kaase

### 3.4.2 INVENTORY

Inventories are stocks of goods and material that are maintained for many purposes which could be for maintenance of existing equipment or in further manufacturing. (Johnson, James C.1998, 300). All organizations at a point in time keep inventory for one or two reasons since the absences of it affect all the players in the supply chain. The actions of suppliers, customers and even the

manufacturing cannot be predicted through fluctuation in demand, the unreliability of supplies and the event off break in production. (Muller 2002, 3)

Decisions concerning inventory is very close to the hearts of functional areas and it becomes difficult concluding since each one want to be satisfied while a production prefer to have large inventory to meet customer demand, finance prefer low leading to disagreement.(Bloomberg 2002, 135). Production is the most affected by inventory issues. In an event of no inventory production comes to a halt which sends customer looking elsewhere for products which is not good for firms because customers can be lost in such occurrences.

### **3.4.3 PURCHASING**

Organizations demand adequate supplies which mean reception of parts and materials to make goods for sale, equipment for production and operations, and expandable supplies for everyday use like stationery.

Organizations recognize the importance of purchasing through cost efficiency and operational effectiveness which is made possible by managers who are skilled in negotiating and strong relationship with suppliers save their organization large sums. Identifying the need and buying it at the right price creates competitive cost advantage which last longer. (Bloomberg 2002, 11-12). Purchasing process links the members in the supply chain and assures the quality of suppliers in the chain. The quality o f the materials and services

purchased affect the product quality and hence the customer satisfaction and revenue. (Coyle et al 2002, 119)

### **3.4.5 MATERIAL HANDLING**

According to Bloomberg (2002, 186) and Coyle (2002, 308) material handling is the efficient short-distance movement of raw material, work-in-process inventory, finished products and storing of substances of any form which usually takes place within the walls of a facility such as warehouse or plant and between a building and a transportation agency.

Efficient movement of products in a facility assists in controlling cost and improving customer service which is affected by time. Since material availability determines the rate at which service will be rendered to customers because late reception of raw materials translate late production as well as late delivery of orders. Thought should be given to the limited space of the facility and must be utilize judiciously to accommodate the high quantity of raw materials and finished products to feed plants and customer orders with no problems. (Coyle 2002, 309)

Material handling could be manual, mechanic or automated. The structure of the facility mostly determines the system to use and must be consider from when the building was started and also the kind of material to be handled determines the equipment to use in the facility. Mechanize or automate

operation in the facility if investments can be justified since some effective material handling systems use high labor to equipment. (Coyle 2002, 313)

Distances materials are moved in a warehouse should be relatively short to minimize labor and equipment cost. Consideration should be given to popular products in the facility by storing them close to the dispatch deck. During dispatch of product, once items are set in motion they should stay in motion for as long as possible because stop and start cost more labor and equipment .(Coyle 2002, 312)

#### **3.4.6 PACKAGING**

Most goods require protection as they move through the integrated logistics system. Packaging does not only help prevent theft and damage but also promote the goods and inform the customer. The package size, shape and material greatly affect production's labor efficiency by the material handling equipment used and also the level of product damage incurred. Aside these packaging have an impact on stacking and the overall utilization of the warehouse and also transportation.



Figure 5 Cocoa in sack

Due to this packaging should always be in coordination with warehouse and transportation to design packages that best suit the product since poor packaging increase the handling cost. Packaging cost may not be as costly as transportation but it takes about 10 percent of logistics cost. (Bloomberg 2002, 194)(Coyle 2002, 314)

Cocoa beans are packaged in a jute sacks to maintain the seven percent moisture required. The sack is perforated to allow air circulation in the cause of transportation and also thick to absorb sweat when they are been shipped in containers. The sack has the weight, country of origin and the content written on it.

### **3.5 ENTERPRISE RESOURCE PLANNING (ERP)**

Enterprise resource planning (ERP) is integrated cross functional software that re-engineers manufacturing, distribution, finance, human resource and other basic business processes of a company to improve its efficiency, agility and profitability. Information sharing across functional units is the main purpose of ERP, that is, functional units being able to obtain information from another unit

without having to leave ones office. It is achieved through a platform called cross functional information system which is the individual units own software program fused in the ERP system. (Murthy 2008, 10)

Enterprise resource planning standardizes an enterprise's business processes and data. The software converts transactional data into useful information and collates the data that they can be analyzed. By doing so, all of the collected transactional data becomes information that the company can use to support business decision making.

The adoption of ERP by a company earns it a great deal of benefits in its operations such as business integration where the software keeps a constant automatic update of information ready to be used for making decisions. The flexibility of the system is realized in the ability to include different languages, currencies and accounting standards covered in the same system. It manages the functional activities of companies in multiple locations. Better analysis and planning capabilities of functions through the unified management related businesses and its data; it becomes possible to use the decision support systems and simulation functions in filing and analysis of data in various dimensions for informed decision from management and the use of the latest technology. (Parthasarthy 2007, 2-3)

### **3.6 TRANSPORTATION**

Transportation and shipping are often used interchangeably but has the same meaning as the movement of goods and cargoes from one point to the other.

However in the case of this study the term transportation is what is going to be used but also implies shipping. With the exception of transportation most of the logistics activities are site specific meaning many of the logistics activities in the supply chain are carried out at a particular location. Transportation on the other operates anywhere (Johnson 1998, 173) Transportation plays a major role in the economic success by allowing for the safe and efficient distribution of goods and services throughout the supply chain. (Bloomberg 2002, 94)

### **3.5.1 THE ROLE OF TRANSPORTATION AND ITS IMPORTANCE**

Transportation links the various logistics activities together. Transportation is seen as the glue that holds the entire supply chain together since without it the supply chain will break down. Because raw materials will not get to warehouse and then to plants and also finished goods cannot get out to distribution warehouses and finally to customers. The efficient management of the transportation activities in terms of delivery gains competitive advantage for the company, that is when goods are delivered on-time and at a lower cost. (Bloomberg 2002, 94)

Transportation adds value to the company by creating time and place utility, the value addition is the actual movement of goods and cargoes to the desired place at the desired time. With the way and manner companies operations are dispersed all over the world, it is not possible to do away with transportation since they connect the supply source to the consumption point. In this period

cheap and labor specialization production sites are located at point where the demand for the products does not coincide so transport is needed to send to demanding markets. (Coyle 2002, 339)

Transportation has a great impact on the economies of developed and underdeveloped nations and they form the backbone of the economies through the revenues they generate from the movement of freight. So it indirectly affects the global economy through the international trade.

### **3.5.2 TYPES OF TRANSPORTATION**

There are five modes of transportation namely air, road, pipeline, rail and water but for the purpose of this project and the product in question we will be looking at road and water since they are the ones used in the shipment of cocoa in Ghana.

#### **❖ Road/ Motor Transport**

Motor carriers are very much part of any firm's supply chain; almost every logistics operations utilizes the motor truck due to its flexibility than the other mode of transports. This mode has direct access to motor carriage from the smallest truckload to the largest tractor- semitrailer combination for more shippers and consumers. Motor carriers compete with airlines and rail for higher-valued products as well as sensitive products. Motor carrier is the second fastest mode of transportation after airlines but with differential

advantage of door-to-door delivery and wide geographic coverage. Since trailers vary in length, temperature control and form, motor carriers can carry a variety of cargo meaning almost anything. Cocoa beans are evacuated to the takeover centers and harbors by truck, with the length and size of a 40” container with open tops so the beans do not sweat.

Motor carrier industry is made of for-hire and private carriers. Private carriers are firms that use their own trucks to transport their freight to any destination of their choice. The for-hire carriers are classified as regulated, contract or exempt. The regulated carriers are not bound by the common rules and laws of carriers but are liable to the damages caused to shippers’ cargo. Contract carriers are those engaged to transport special cargo on rare basis and are governed by the terms and conditions agreed upon. Exempt carrier engaged in the transport of agricultural produce therefore excluded from economic regulations.

The haulage of the beans from the farmers to the ports has been outsourced to private transportation companies. These are transportation companies which have registered their company name with COCOBOD. The haulage companies close to a point where cocoa beans need to be evacuated to the takeover or shipping port is notified. The companies send their way bill to COCOBOD who intend arrange for it to be paid.

#### ❖ **Water/ Sea Transport**

Water transport is the movement of freight or cargo on water ways. This form of movement could be domestic or international. Due to the cost structure and ability to transport large volumes of cargo or freight, water carriers dominate and have a big market share of the international transportation operation. (Bloomberg 2002, 106) Water carriers do haul a variety of commodities from liquid to grains; this gives it the advantage of high capacity for long-haul at low rate.

Due to the huge capabilities of water carriers to move variety of commodities, the industry has categorized carriers into three (3) types; private fleet, tramps (chartered or leased vessels) and liner carriers.

Private fleets are merchants or manufacturer owned which to carry their own goods. Lumber and oil companies usually operate large fleet of specialized ships by so doing, they have carriers available at a control cost and also the ships are available for the special need. The ships are of the size the merchant companies need and characteristics required to support their businesses.

Trading companies operation does not call for the ownership of company's own ship so they ship thousands tons of cargo at a time which is less shipload. Tramps are vessels chartered for the transport of goods as and when need. They are an ad hoc kind of an activity that is leasing a vessel for a one time use. Tramps are ideal for shipment which does not suffer from time restraint and are mostly full to capacity before setting sail due to this they offer lower rates to shippers.

Liner carriers are shipping lines that transport small quantities of cargo for shippers on a particular route and schedule. So liner companies consolidate cargoes from various shippers into one vessel for shipment but usual set sail partly full due to time constraint factor. (Donald 2002, 89; Bloomberg 2002, 107)

There are several types of ships available when it comes to the shipping of goods on waters and the commonest ocean vessel used today is the general cargo ship. These ships are mostly engaged on contract basis to transport shipload cargo, they possess large stows equipped to hold variety of cargo. Many of these general cargo ships have tween deck that is a deck between the main deck and the deck used to stow palletized cargo. Some ships are equipped with large side doors for easy loading of palletized cargo by forklifts and some also have derricks which help in loading and discharging cargo at ports without the up-to-date cargo handling equipment. (Coyle 2002, 353)

Bulk and ore carriers are also referred to as dry- bulk carriers. These ships are fit with large compartment for carrying loads of grains, ore or coal. Mostly the entire ship is used to carry the same cargo though it is divided into different compartment and could carry another cargo in a different compartment. Iron ore is the largest bulk cargo by tonnage followed by grains and coal. The distinction of bulk carrier is whether they carry equipment on board to load or unload cargo. Bulk carriers are not as large as tankers because tankers need not navigate inside ports in order to load or discharge cargo but bulk has to, so docks have to be dredged to deepen their depth to receive large vessels and

wall along them be strengthened to prevent collapse. (Donald et al 2002, 102)

Bulk ships are used only when mega bulk shipments are going to be done. This kind of shipment is not done normally, moreover its only take place in Takoradi port.

Tankers are the largest carriers of cargo by tonnage. They vary from very large crude carriers (VLCC) to ultra large crude carriers with deadweight of about 299,000. Tankers are built in the same way as bulker carriers but with smaller deck openings and double –hulled to counteract the problem of oil spillage. Similar type of tanker is the liquefied natural gas carriers which also carry large some of gas cargo.

Container ships include the most important elements in the business world now. These ships are designed to carry standardized containers which are measured in twenty-foot equivalent units (TEUs) or forty-foot equivalent units (FEUs) long. Container ship come in different sizes which depends on the number of TEUs it carries, the largest container ship the late eighties carried about 4300 TEUs but today there are ships which could carry 18000 TEUs are called post-panama. The larger the ship's capacity for containers the lower the cost ratio per container that is if a ship carries large numbers of containers on a sail it reduces the cost on each container. Container ships can carry variety of cargo and even those which needs special handling like temperature control. Container makes it possible to access inland through intermodal arrangement and they are preloaded from origin and then placed aboard ship, allowing lower port loading and unloading costs. (Coyle 2002,353, Donald 2002, 104) The company whose

supply chain is under study mostly use this type of vessels for the transportation of the beans to customers around the world.

Roll-on-roll-off (RO-RO) are large ferry ships whose cargo are driven unto it using built-in-ramps and drives or tow it at the destination? Most of the car manufacturing companies run Ro-Ro vessels to transport their cars to markets around the world. Ro-Ro makes it possible to transport unconventional cargo which an ordinary ship cannot carry like cranes and large earth-moving equipment. On reaching their destination and off loading its cargo, the vessels are loaded with grains back to their origin. Some of these ships have the capacity of transporting about 2,000 cars at a time. (Coyle 2002, 353-4)

### **3.5.3 FACTORS AFFECTING TRANSPORTATION**

**a. Transit time:** Is the time taken for a transportation mode to travel from its country of origin to its destination?

Motor carriers are the second fastest transporters of cargo aside air carrier. Due to the capability of ignoring transit terminal because of the operational independence of each trailer unit, each trailer has its own power unit so they go straight to consignee without passing by terminals and by so doing they travel

faster. The transit time of motor carrier might be prolonged due to effects of weather and traffic on the roads which occur at peak seasons of the year.

Water carriers are the slowest of all the mode of transportation; they travel at the pace of snail because they make a lot of stopovers from one continent to the other. This transit time is compensated by the rate charged to transport cargos which are mostly lower than the other modes. This channel suffers from weather condition which affects navigation so makes travel time longer. (Coyle 2002, 350)

**b. Cost:** The cost of transportation has always been a big issue for logistics managers. With the motor carriers, rates are charged on per ton-kilometer, motor carriers are very expensive means of transport after air. Rates are directed related to speed that is the faster the carrier to deliver cargo to the destination not only the terminal the higher the cost because from the terminal it has to go the consignee. Due to this factor, commodities of high value are transported by motor which should be able to offset some the cost of involved in transportation.

With the ease of entry into this industry, it has boosted the competitive nature with more carriers entering the industry and offering lower rates and improved service to gain market and compete for freight. The nature of competition has reduced the transportation cost of shippers and improves profitability. (Coyle 2002, 351)

With this being the cheapest form of transportation, with the capability of conveying any kind of cargo in whatever form. The initial investment is what is huge for the equipment and not the right of passage since nature has the way already.

**c. Accessibility:** Accessibility is the ability of transportation to reach any required destination not a terminal. Motor carrier has the advantage of access than any other carrier in the industry, so there is a saying in the truck industry that “if it got there, a truck brought it”. So no matter the mode of carrier used, motor carrier will be the last supporting transporter of cargo to the final destinations because of its reach. It is true that road transport has the wider access to location but it is affect mostly by infrastructure like road networks. Since all cocoa production is from the hinterland, it is most time difficult for haulage carriers to reach due to bad conditions of road network.

The reach of water carriage is very low and of great restrain to shippers who are not adjacent to waterway to use water transport directly. Even before water carrier could be used, motor carrier must be used to bring the cargo to the port of sail.

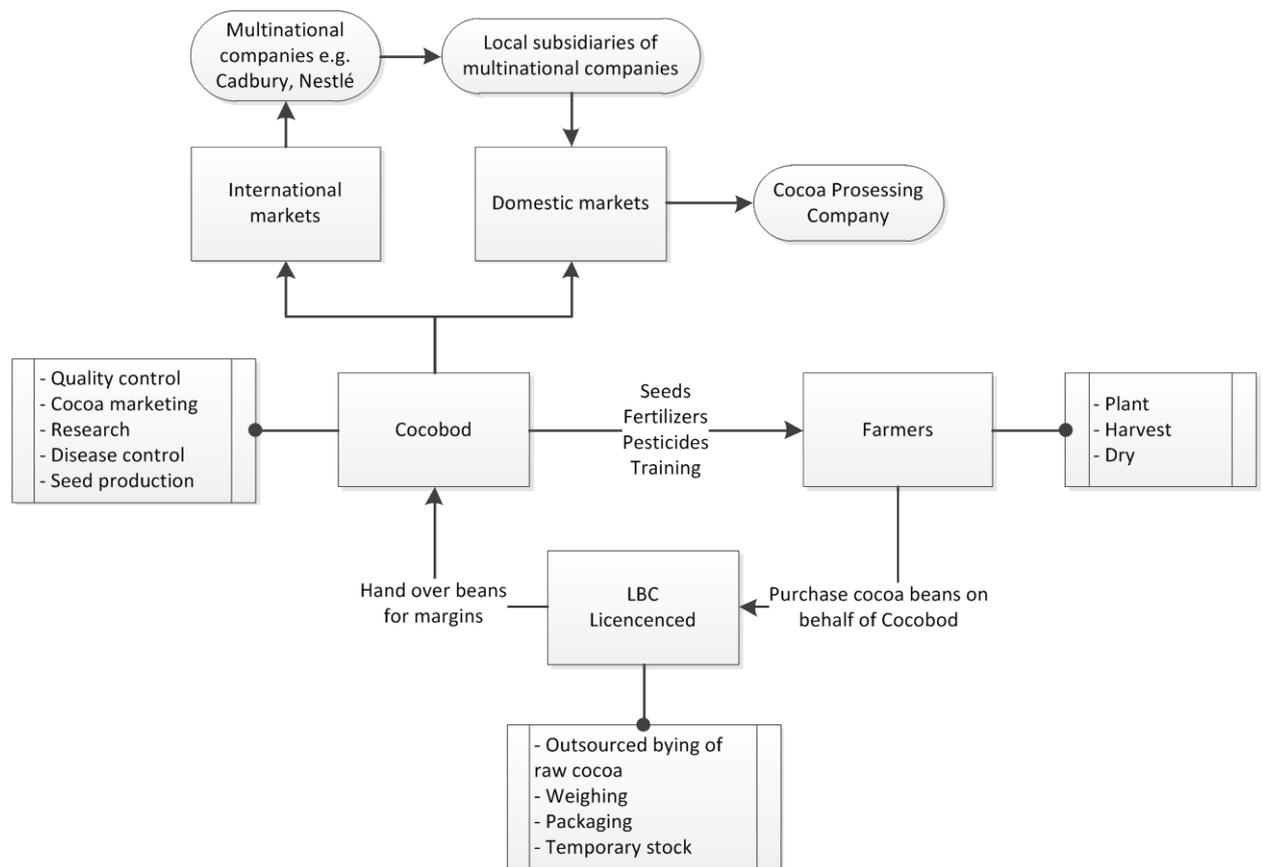
**d. Nature of goods:** Motor carriers transport manufactured commodities of high value over relatively short distance though some transport low value products over long distance. Products that are perishable mostly travel by air or road due to short transit time while cargoes of low value, high density that can be loaded

and unloaded travel by water for long distances. There is required moisture content for cocoa beans before they are shipped. They should not exceed seven percent therefore much care is taken to maintain that amount of moisture. If the moisture exceeds the required amount, the beans get wet and start to mould before reaching its destination. To prevent the beans from getting wet in the cause of shipment, extra jute sack and desiccants are hanged in the container to absorb the moisture .When less the beans are regarded burnt and off no use.



Figure 6 Desiccant (moisture absorbent)

### 3.5.4 SUPPLY CHAIN MODEL OF COCOBOD



**Ghana Cocoa Board (COCOBOD)** is a body established by the government of Ghana to manage the cocoa industry on its behalf. To carry out this mandate effectively, COCOBOD created five (5) subsidiaries and tasked them with different obligations to assist in the development and sustenance of the industry. Through the seed production unit of COCOBOD, high yielding seed pods are distributed to farmers in all the growing regions to plant. Also the farmers are trained by extension office of the disease control unit on the application of fertilizer and pesticides to improve the yield and control the spread of cocoa diseases such as black pod and swollen shoot.

**Farmers-** According to the website of cocobod, there about 1.7 million smallholders' farmers in Ghana and they cultivate the crop under extensive management system. Each farmer possesses between 1-2 hectares of cocoa farmland and this farm has an economic life cycle of 20-30 years.

The cocoa fruit takes about five months to mature or fully grown, that is, from flowering to ripen of the fruit all the while being prone to diseases and pest infections. This means if the process of maturity is not carefully monitored a whole farm could be lost to these diseases (swollen shoot) and pests (capsids).

The cocoa fruits are ready for harvesting when the pods become deep yellow for most varieties. The tools used in the harvesting are long handle knife called go-to-hell and machetes. The harvested pods are collected together; the pods are cracked open with a wooden baton and the wet beans removed by hand.

The wet beans are fermented for some days to ensure the chocolate flavor is developed upon roasting in the factories. Fermentation is done by heaping of 90-250 kilogram of wet cocoa beans on plantain leaves which is then covered with more plantain leaves. This should be done away from full sunlight and that is why it is done at the farm and must be turned after three (3) to ensure even condition in the heap. The corrosive liquid from the wet beans starts flowing after the second day of the fermentation process. When the fermentation process is done, the beans are sent to the villages to be dried on raised bamboo mats for 7-10 days or longer depending on the weather condition because the beans normally takes longer time to dry during the raining season.

The drying should be a gradual process for the beans to attain the best quality of cocoa as possible with no defective beans. When the beans crackle in the hand when rubbed together then they are said to have achieved the desired level of dryness and 7.5% moisture content left, they are cooled for one more day, and then ready to be sold.



Figure 7 Drying of cocoa beans

**License Buying Companies (LBC)** are internal marketing companies who have been given the license to buy cocoa beans from farmers on behalf of cocobod. It is required that, the LBC has a permanent buying location where the farmers bring their graded beans sealed in export sack by the quality control division for them to buy. When the farmers arrive in the metal roofed shed of the LBC, the beans are weighed on certified scale in the presence of the farmer and also the quality and moisture content checked by the manager of the shed.

The LBC upon gathering quite a quantity of cocoa and the availability of transportation, the cocoa are evacuated to the takeover centers of Cocoa

Marketing Company (CMC). The LBC sell the cocoa to Cocoa Marketing Company of Cocobod at a fixed price.

**Cocoa Marketing Company** is the subsidiary of COCOBOD tasked with the responsibility of selling, warehousing and shipment of the cocoa beans. When the beans are received from the LBC's they are sent to the warehouse by CMC until it's ready for shipping. Shipment season for cocoa is from October to September, and it is done in three months period that is, October –December (oct-dec). Sold beans could be shipped earlier depending on the agreement with the customer but CMC would not warehouse beans beyond its shipping period since it will cost it more in warehousing. Beans are sold mostly to domestic and multinational companies (nestle and Cadbury); some of the multinational companies are present in the domestic market so some of their bulk purchases are sent to their local representative. Cocoa processing company is the only Ghanaian company that process cocoa beans to chocolate and beverages and in the past was a part of COCOBOD until it became autonomous. The rest of the beans are sold for foreign currency to support the economy since it is the second highest source of revenue for the country.



Figure 8 40" container load of cocoa

#### 4. ANALYSIS

The data results for this research were obtained through formulated electronic-mail interviews with employees of COCOBOD. The initial plan was to organize a telephone interview with the employees but they were reluctant to talk, so e-mail was used instead. The number of respondents targeted was however not achieved despite the fact that the questions were sent to the entire selected sample at the beginning of the data gathering process. Therefore this analysis is based on the responds of the two informants who were thoughtful enough to answer the questions sent through email and personal observation made during my internship period at the Ghana Cocoa Board Company.

When the informants were asked about the role of shipment in the company, it was gathered that, through shipment ninety percent of cocoa produce in Ghana are shipped to customers around the world to earn foreign exchange for the company and the country at large. The value addition that is stated in the role of transportation can be seen clearly in this responds. Without the movement of cocoa beans from the farmer to COCOBOD and then to customers dispersed around the world through transportation to enable the beans to be converted into consumable items for the end-user, the beans would have been of no use to anybody. Shipment is the link that connect supply source to the consumption point by so doing establishing a relation between the points involved as in the case of Ghana where it has developed international relations and partners through transportation of cocoa beans.

According to the informants, transportation of cocoa bring the needed the revenue for the day-to-day running of Cocobod and also supplementing the economic activities in Ghana. Statistics from Bank of Ghana states that in 2009 508,000 tonnes of cocoa were exported worth \$1.4 million dollars, cocoa is the second largest revenue provider for the country. As cocoa generates revenue from its sales for Ghana and Cocobod, the same way transportation companies generate revenues for their respective companies and the economies they operative within. The activities of transportation such as movement of freight stir up the economy of both developed and underdeveloped nations. It enhances bi-lateral trade between nations.

When asked about the stages involve in shipment of the cocoa, experience could be seen in the responds received. According to informant "A" who has worked in the shipping department for over thirty (30+) years answer was very orthodox because she started the stages from the planting, harvesting, evacuation, warehousing, marketing, shipment and revenue. In this responds the informants went through the supply chain model drawn above which show that she is aware of the other processes before and after her daily duty. While "B" who has been in the same department for four (4) years begins the process from warehousing then shipment that goes to say that she does not pay attention to the activities that occur before and after her main duties.

Looking at the factors affecting shipping, both responds gave the same answers as weather as the first factor which tells that they agree with the experts on that

factor. Weather is a natural occurrence that is possible to predict but cannot be stopped, its impact on freight transport can either hinder the whole process or disastrous. In the case of bad weather freight would not reach their desire destination at the expected time or the journey might be cancelled to prevent loss of resource and in the event where the freight has already started its journey and encounter an extreme weather, the freight might be lost in the process. Weather issues such as these increase the cost of freight and also make it difficult to access certain places.

Infrastructure is a major factor that affects this industry, bad road networks and channel leading to supply sources or destination makes it difficult to meet deadlines for shipment and further more causes huge damages to haulage vehicles leading to cargoes stuck in very odd locations. Equipments required at ports to load and unload cargo unto vessels are lacked making operation extremely difficult.

Lacking the required advance technologies and means of gathering documents make it challenging having the needed documents to work with. Workers have to spend man hours collecting documents from one agency to the other to send to customers who are dispersed around the world. Technology such enterprise resource planning enable companies to work continuously without leaving their office premises to collect documents from collaborative agencies. All transactions can be found and monitored on this platform to the extent that customers can use it also.

With regards to cocoa price determination, it was understood that COCOBOD has no say on the price of the cocoa that is marketed or shipped to the world market. Prices are set by the international Cocoa Organization (ICCO) which is made up of cocoa growing countries and consumers, these prices are generated from trading on the cocoa market. Prices are mostly determined by market forces that is, the level of demand for the beans at any point in time and the price it is bid for.

Cocoa is regarded the backbone of COCOBOD and the nation Ghana at large because it generates revenue for the company and the nation to build infrastructures and provide amenities. Through the provision of these infrastructures and amenities, farmers and agencies involve in the cocoa business put their earnings in the economy in the form of expenditures to buy amenities and also educate their children. To reward the efforts of cocoa farmers, COCOBOD established a scholar fund from the revenue generated from the cocoa sales to support children of farmers to further their education to the high school level.

## 5.0 CONCLUSION

The objective of this paper was to find out into detail the supply chain activities of COCOBOD. By this I was hoping to shed some light on how cocoa as an internationally sort out commodity travels from the point of harvest in the hinterland (farmers) to the shelves of stores worldwide as products.

I set out to clarify this because, I think perhaps most consumers of chocolate put little or no thought into how they are able to buy a bar of chocolate from a store. While an entire new research could be conducted on the processing of cocoa as raw material into chocolate and other cocoa products for consumption; my aim in this paper has been to only consider the transportation process of the cocoa (the raw material) from the farmer to the international buyers.

The question I asked myself is have I accomplished my purpose for this paper? As the old saying goes, no matter how flat you make a pancake it will always have two sides. On the one side I have partly accomplished what I set to do but on the other side one could say that I have fail coming up with a generalize conclusion for this paper. It is due to the responds to my questionnaire which was beyond my control even though I tried all means. My sample group failed me by not answering my questions so I had to rely on only two responds to draw this conclusion.

I realize that, my informants had an idea about the questions raise except those pertaining to management. It is a common practice in most companies in Ghana where executives are ones supposed to figure out ways to meet targets. The ordinary employees keep to their daily duties.

I will to emphasis that the topic is very educative and I was expecting to draw a better conclusion than I have now. It is not complete as it supposed to be so it is a paper to be improved upon and anyone interested in the topic can take it up.

## 6.0 REFERENCES

Ajami, Riad A. Cool, Karel Goddard, G. J. 2006 – International business: Theory and Practice

Ayers James B 2004- Supply chain project management

Bashir, Muhammad Afzal, Tanveer Muhammad Azeem, Muhammad 2008- Reliability and Validity of Qualitative and Operational Research paradigm  
<http://www.pjsor.com/index.php/pjsor/article/viewFile/59/38>

Blaxter, Loraine Hughes, Christina Tight, Malcolm 2006 – How to Research (3rd Edition)

Bloomberg David J, Lemay Stephen, Hanna B. Joe 2002- Logistics

Cacaoweb.net – Drying cocoa beans

Cocoa marketing company

Cocoa Marketing Company-<http://www.cocoamarketing.com/production-marketing-cocoa.php>

Cocoa research institute of Ghana-[http://www.cocobod.gh/cocoa\\_research.php](http://www.cocobod.gh/cocoa_research.php)

Cocoa swollen shoot virus disease control unit -  
[http://www.cocobod.gh/cocoa\\_swollen.php](http://www.cocobod.gh/cocoa_swollen.php)

Coyle John J, Bardi Edward J, Langley Jr. C John 2003 - The management of business logistics 7th edition

[ghanavoices.wordpress.com](http://ghanavoices.wordpress.com)  
[ghanavoices.wordpress.com](http://ghanavoices.wordpress.com)

Ghanavoices.wordpress

[http://www.google.com/search?q=cocoa+sacks&hl=en&qscr=1&nord=1&rlz=1T4SKPB\\_enFI344FI345&biw=1280&bih=611&prmd=imvns&tbm=isch&tbs=simg:CAQSEglmP5v2W7b-FiFEJQA-cGUawg&dur=8872](http://www.google.com/search?q=cocoa+sacks&hl=en&qscr=1&nord=1&rlz=1T4SKPB_enFI344FI345&biw=1280&bih=611&prmd=imvns&tbm=isch&tbs=simg:CAQSEglmP5v2W7b-FiFEJQA-cGUawg&dur=8872)

Gillham, Bill 2010 – Case Study Research Methods

Glenn, Jerome Clayton 2010 – Handbook of Research Methods

Golafshani Nahid 4 December, 2003

<http://www.mendeley.com/research/understanding-reliability-validity-qualitative-research/#page-1>

Goodwin William Lawrence, Goodwin Laura D 1996 - Understanding Quantitative and Qualitative Research in Early Childhood Education

Holloway, Immy 1997 – Basic Concepts for qualitative research p.159

<http://www.cacaoweb.net/cacao-beans2.html>

Jespersen Dam Birgit, Skjott-Larsen 2005, 10 - Supply Chain Management: in theory and practice

Johnson James C, Wood Donald F, Wardlow Daniel L, Murphy Jr. Paul R 1999 - Contemporary Logistics 7th edition

Jonker Jan, Pennink Bartjan 2010 - Essence of Research Methodology: A Concise Guide for Masters and PHD

Kothari, C. R. 2004 – Research Methodology: Methods and Techniques

Kumar, Rajendar C. Dr 2008 - Research Methodology

Lincoln, Y. S. Guba, E. G 1985 – Naturalistic Inquiry

Means Howard B 2001- Money & Power: The History of Business

Muijs Daniel 2010 – Doing Quantitative Research in Education with Spss

Murthy, C.S.V 2008, 10 - Enterprise Resource Planning and Management  
Information system: text and case studies

Parthasarthy, S 2007, 2 - Enterprise Resource Planning: a managerial and  
technical perspective.

Patton, M. Q 2002- Qualitative evaluation and research methods  
<http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>

Questionnaire

Rubin, Allen Babbie, R Earl 2010- Research Methods for Social Work

Seed production unit - [http://www.cocobod.gh/seed\\_production.php](http://www.cocobod.gh/seed_production.php)

Wikipedia.com, 2008 - <http://en.wikipedia.org/wiki/Business>

Wood, Donald F. Barone, Anthony Murphy, Paul 2002 – International Logistics  
(2nd Edition) p.102

Worldcrops.com, 2011 – World Cocoa Production Estimates.  
[http://www.worldcrops.com/wp-content/uploads/2010/11/WORLD-COCOA-May-03-2011-WorldCrops.com\\_.pdf](http://www.worldcrops.com/wp-content/uploads/2010/11/WORLD-COCOA-May-03-2011-WorldCrops.com_.pdf)

[www.cocobod.com.gh](http://www.cocobod.com.gh)

[www.wikipedia.com](http://www.wikipedia.com)

## 7.0 APPENDIX

### QUESTIONS

The questions below are in connection with my thesis project which is about "evaluating the supply chain of CMC" (Cocoa Board) with the aim of finding out the factors that affects shipping (Transportation).

#### Background questions:

I. Name *FAUSTINA*

II. What is your job and position at CMC (Ghana Cocoa Board)? *SHIPPING OFFICER*

III. How long have you worked at the company? *30 PLUS*

IV. In brief, how would you describe CMC (Ghana Cocoa Board) as a company? *A SATISFYING PLACE TO WORK AT*

#### Actual questions

a) What role does the shipment of cocoa play in the company as a whole?

*About 90% of Ghana's Cocoa is marketed and shipped by CMC and the Rest sold to Private companies in Ghana*

b) How does the shipment of cocoa affect the company at large?

Shipment brings the needed revenue to  
CME

c) Are you familiar with the different stages of the shipment of cocoa? What are they?

① Planting, Harvesting, Evacuation,  
Warehousing, Marketing, Shipment,  
Revenue

d) Is there a specific quota set by the company for the shipment of cocoa?

\_\_\_\_\_

e) How do you measure and evaluate this quota and how often

\_\_\_\_\_

f) What are some of the factors affecting the shipment of cocoa?

Bad weather, Rainfall Pattern  
Transport, Documentation

g) Does the GCB determine the price of its shipment or do external forces play into this.

GCB does not determine the  
Price of cocoa been Shipped

h) How do you compare the revenue generated from the shipment of cocoa to the cost of the shipment?

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i) Do you consider the shipment of cocoa as the backbone of the GCB and why

Yes Cocoa is the backbone of GCB

- ① Revenue to Support the Nation
- ② Pays Cocoa Farmers
- ③ Scholarships for farmers, school children
- ④ Road Construction

### QUESTIONS

The questions below are in connection with my thesis project which is about "evaluating the supply chain of CMC" (Cocoa Board) with the aim of finding out the factors that affects shipping (Transportation).

#### Background questions:

I. Name

II. What is your job and position at CMC (Ghana Cocoa Board)?

III. How long have you worked at the company?

IV. In brief, how would you describe CMC (Ghana Cocoa Board) as a company?

i ELLEN GIFTY ABADOO

ii SNR. SHIPPING CLERK in charge of Shipping ~~documents~~ documentation.

iii 4yrs.

iv CMC is a Subsidiary of Ghana Cocoa Board in charge of the trading and Exports of Ghana Cocoa Beans.

#### Actual questions

a) What role does the shipment of cocoa play in the company as a whole?

The shipment of cocoa earns the company foreign exchange  
The shipment of cocoa helps breeds international relations  
between Ghana and the world.

The export of cocoa has helped projects Ghana as a  
Nation to the world.

The Shipment of Cocoa helps attracts high premium for Ghana Cocoa quality.

b) How does the shipment of cocoa affect the company at large?

The Shipment of cocoa attracts foreign exchange for Cocoa Board and the Nation at large

The Shipment of Cocoa enhance bi-lateral and international trade between Ghana as a country and the world.

c) Are you familiar with the different stages of the shipment of cocoa? What are they?

Warehousing of the Cocoa, fumigation of Cocoa, Container dressing, Evaluation for Shipment

d) Is there a specific quota set by the company for the shipment of cocoa?

~~NA~~

NO

e) How do you measure and evaluate this quota and how often

NA

f) What are some of the factors affecting the shipment of cocoa?

- Weather conditions, logistics, Documentation.
1. Weather conditions such as Rain can affect the shipment of cocoa.
  2. Logistics such as transportation of cocoa from the farm lands to the warehouses and for the evacuation process.
  3. Documentation.

g) Does the GCB determine the price of its shipment or do external forces play into this.

price of cocoa for shipments is determined by the international world prices and the market forces of the international market.

h) How do you compare the revenue generated from the shipment of cocoa to the cost of the shipment?

It is profitable.

i) Do you consider the shipment of cocoa as the backbone of the GCB and why

Yes the shipment of cocoa is the backbone of the GCB  
Because it earns foreign exchange for the cocoa industry  
and helps projects the cocoa industry in the international  
market.