



**FACULTY OF ENGINEERING  
AND SUSTAINABLE DEVELOPMENT**

**Enhancing Supply Chain through Knowledge  
Management Practice**

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## **Abstract**

*Supply chain management and knowledge management are seen to be value adding practices to enhance organization competitiveness. The supply chain process is complex and involves many interrelated decisions made in a complex environment. However, there has been limited effort in indentifying the impacts of knowledge management on supply chain management most especially in emerging economy like Nigeria, hence this study.*

*The research contributes to supply chain management literature from two important areas; managing change in supply chain and inevitable practice of knowledge management in supply chain for organizations development. The connections were established between knowledge management and supply chain this was done through identification of positive factors and the constraints. The uniqueness of knowledge management of information, relationship independence is seen as the areas that Knowledge Management contributes to better supply chain.*

*In order to assess the existing literature a case company with huge network is selected for the empirical study. This study is carried out in a big conglomerate company in Nigeria with huge network of partners in its supply chain. Interview and personal observations are the major instrument used in the collection of data, these interviews are duly analysed.*

*It was found out that the rate of change in business environment reiterate why the knowledge management approach: that is based on development of mutual respect and interdependence that is much desired in the new business environment, most especially in supply chain in collaborating entire partners in the network.*

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## CHAPTER ONE

### 1. Introduction

#### 1.1 Background to the study

In the recent years, the world has witnessed the rise of knowledge-based economy as main driver of global and local economic development (Yigitcanlar, 2009). Carrillo (2006) has identified the 21st century as the “century of Knowledge Cities”. In the context of the new knowledge area, the concepts of knowledge, innovation and creativity have become primary factors of production and development (Durmaz et al., 2008). In this context, “knowledge based development” has gained popularity as a powerful strategy for sustainable economic, social and urban growth, (Yigitcanlar and Velibeyoglu, 2008). Firms utilize industrial knowledge to manage change in its environment due to product life cycle-time and cost reductions, variations in product and process specifications (Chin-Tsang H, 2009). Knowledge can therefore be defined as a critical resource for any business activity. Knowledge is a strategic resource for any organization; it is considered the cornerstone of the development of core competence that will generate competitive advantage (Chin-Tsang H, 2009). Knowledge can also be described as acquisition of awareness of an ideal toward using same in achieving other goals.

Nonaka et al., (2000); Ngai & Chan, (2005) described knowledge as an important asset that organization should take cognizance of in order to be competitive. They further describe knowledge to be of two types; tacit and explicit, the two are said to be of importance to organizational development as a proactive asset to tame numerous changes in business dynamics. McDermott, (1999) describes knowledge as an abstract concept that is difficult to idealize and put in particular a perspective, despite this challenge and lot of ambiguity in its existence, knowledge management is generally believe to be an important practice to create, store, filter, develop and use knowledge in an organization’s network for further development and grooming in the face constant and unending change. In order to capitalize on this knowledge base, firms have to organize and manage it in creative and useful ways. As a result, new information technologies, such as Knowledge Management is indeed required for an organization to keep afloat in today’s economy (Chin-Tsang H, 2009).

Knowledge management, due to the abstract nature of knowledge itself makes description of what knowledge management is to be from different perspectives as well. One school of thought describes knowledge management as a systematic approach or effort in using information as a further value creation in organizations (McDermott, 1999). The other apostles of knowledge management have seen it as creation of value through interaction and reflection in past experience among actors in organization. Nonaka et al. (2000); Mcdermot, (1999);Ngai & Chan, (2005) submit that the two aspects of knowledge management are complementary for organizations to benefit optimally from the practice of knowledge management.

The place of knowledge management in organization success cannot be underestimated. A cursory look at today organization will show that all aspects of the organization have been greatly enhanced by knowledge management. This aspect include; the Employee Recruitment, Human Resource Training and Development, Marketing, Sales and Supply Chain. An examination of organizations that are involved in one form of supply shows that without a knowledge management it would be difficult to maintain a highly effective supply chain. Hence, supply chain is a system of organizations, people, technology, activities, information, and resources involved in moving or transferring a product or service from production end to the needed end (Gokhan and Needy, 2010). To achieve a desired end of supply chain; which is an efficient and effective flow in the supply chain network; is a seamless coordination of both information and relationship among all the parties in the chain is necessary. This is as a result of competitiveness among the peers in the business and mitigating the effect of constant change in the business environment (Lee, 2010; Cox, 2001). Supply chain management can therefore be defined as the process of coordination of production processes and materials among all the parties in the chain (Lee, 2010). Bessant & Tidd, (2007); Nonaka, (2000) observe that with the collaborative nature of business in this information age, organizations leadership must learn how to manage beyond its own organization that there must be extension of leadership to others in the network. While Bessant et al, (2003); Bessant & Tidd, (2007) opine that organizations need to make more informed effort in turning new development into learning.

It is imperative therefore for an organization to adequately integrate knowledge management into its supply chain. This is also the view of Christenssen et al., (2002),

when they submit that supply chain needs above par attention, to cope with consistent disruptions it usually experience. Knowledge Management approach that hinges on management of information and interaction is seen as an avenue in which the numerous stakeholders in supply chain could be managed to enhance organization performance. In describing enhancement Sandel (2004) opine that enhancement is an act of improving on existing product, situations, conditions, facilities, processes etc., with aim of mastery of such situations, conditions etc. He further concludes that an enhancement is a noteworthy improvement to the product as part of new version of it. In enhancement process different instruments or tools are used, this ranges from innovation to knowledge management (Sandel 2004). Supply chain enhancement through knowledge management is converting both individual and organizational knowledge into learning for organizational competitiveness (Nonaka et al., 2000; Bessant & Tidd, 2007). This in turn eliminates problems faced due to late delivery poor quality of supply and availability of supplies at the lowest possible cost (Sandel 2004).

In supply chain there are complex and numerous decisions making process among organizations in the chain (Terpend et al. 2011). From the review of supply chain literature, Frohlich and Westbrook (2001); Vickery et al. (2003) reveal that supply chain is critical for organizations strategic planning and most especially for development towards competitiveness. Submissions from Fisher (1997); Lee (2002); Christopher, Peck and Towill (2006) also reveal that there are different supply chain strategies applicable for different organizational needs. Researchers on supply chain have been proposing different models from different organizational situation and attributes work on (Doty and Glick 1994; Narasimhan et. al 2008).

Further studies in supply chain include that of Carr and Smeltzer (1997), Krause et al. (2001), Carr and Pearson (2002), these works address the imperative role of strategic purchasing in Supply chain management. In the same vein, Heidi and John (1990), Carr and Pearson (2002), Shin et al. (2000) also highlight advantages of strategic supplier relationships. Relationships of buyer and supplier development, strategic sourcing, suppliers' performance and evaluation method are investigated by (Carr and Pearson 2002). From Shin et al. (2000) work, impact of different organizations orientation is investigated on performance and its measurement. In spite of knowledge management



being a veritable tool in supply chain management as well as its global utilization in supply chain management, still knowledge management application in supply chain management is still a hope not reality for most organizations most especially in the developing economy like Nigeria (Somuyiwa, 2009). However, there has been limited effort in indentifying the impacts of knowledge management on supply chain most especially in emerging economy like Nigeria, which may not be unconnected with dearth of adequate information on the impacts of knowledge management on supply chain, hence this study.

## CHAPTER TWO

### 2. Purpose

As highlighted in the previous section, the overall purpose of this research exercise is to explore the relationship that exists between knowledge management and supply chain with a view of drawing a conclusion that is capable of replication. Initially, the supply chain is pinned on business and market forecast but the dynamics nature of things has made the focus now to be on demand side in order to eliminate problems associated with forecast failure in most industries. The manufacturing in many organizations is dependent on demand from the market place, as these trends increase; customization of individual needs also emerges that poses another challenges to supply chain indices. Through various forms of development, the disruptions and changes in supply chain is not relaxing but on great increase, for organizations to keep pace with the challenges and opportunities posed by these changes, supply chain activities must be attended to with appropriate attention. Also for organization to break-even and maintain its steady progress there must be a continuous effort on reducing waste and cost in its cause of production. To achieve this, the organization chain must be well oiled and this in turn will enhance effective performance. In achieving a well balanced relationship, the partners must go beyond profit making but on how there will be commitment of all in developing the value chain for betterment of all partners (Cox, 2001).

In the recent, the product life cycles are becoming shorter, products become more complex and the demand for a high flexibility on the market increases drastically, it is therefore important to improve on managing supply chain. The problem therefore emerges from how organizations can improve on their supply chain, how a transformation could be enthused by using knowledge management and if the relation of such is economically beneficial. Emphasis must also be on how they adequately integrate knowledge management into their supply chain processes.

Therefore, the research in this thesis intends to explore the relationship that exists between knowledge management and supply chain management. To also see how supply chain can be enhanced through effective knowledge integration and knowledge sharing which are the end products of knowledge management (Cox, 2001).

This work therefore attempts at providing answers to the following germane questions;

- ❖ What are the constraints militating against the adoption of knowledge management in supply chain?
- ❖ What are the impacts that knowledge management has on supply chain management?
- ❖ Who are the major players in the implementation of knowledge management in supply chain?

In the next chapter the research methodology for this study will be introduced, following by literature review for the research which finally leads to the empirical research part of the study.

## CHAPTER THREE

### 3. Research Methodology

#### 3.1 Introduction

This section of the research describes how the study is conducted and the methods used in the data collection and analysis. The term ‘methodology’ refers to the general approach taken to the research process, while ‘methods’ refers more specifically to the various ways in which data is collected and analyzed (Murray and Hughes, 2008). This section, therefore discusses the methodological considerations of the study.

#### 3.2 Research Type

As identify by Saunders et al., (2009) research types can be classified in accordance with the purpose of research such as exploratory, descriptive and explanatory. An exploratory study is a valuable means of finding out what is happening, to seek new insight, to ask questions, and to assess phenomena in a new light, whereas the objective of descriptive research is to portray an accurate profile of persons, events or situations (Saunders et al., 2009). Also, explanatory researches are studies that establish causal relationships between variables, emphasizing studying a situation or a problem in order to explain the relationships between variables.

According to Saunders et al., (2009) a research can be distinguished as qualitative or quantitative according to the data collection techniques and analysis procedures. Quantitative researches are extensively recognized as any data collection technique, such as questionnaire, or data analysis procedure that generates or use numerical data (Saunders et al., 2009). They emphasize quantification in the collection and analysis of data. It also entails a deductive approach to the relationship between theory and research, in which the accent is placed on the testing of theories, as well as a view of social reality as an external, objective reality (Bryman and Bell, 2007). While, qualitative research refers to any type of research that produces findings not arrived by statistical procedures or other means of quantification (Strauss and Corbin, 1998). In their suggestion, Strauss and Corbin, (1998) opine that instead of gathering data by means of interviews and observations and quantifying qualitative data, a non-mathematical process of interpretation should be applied for the purpose of discovering concepts and relationships in raw data and then organizing these into a theoretical explanatory scheme. Qualitative

researches emphasize words rather than quantification in the collection and analysis of data, and an inductive approach to the relationship between theory and research, in which the emphasis is placed on the generation of theories (Bryman and Bell, 2007). This research work is basically exploratory; the intention is basically to explore the relationships that exist between knowledge management and supply chain. As well as, the identification of the impacts that exists between the two. To achieve this, emphasis is on qualitative data collection technique and this is done through a well semi-structured interview.

### **3.2.2 Case Selection**

The explorative and case study strategies are adopted. These two research strategies have been seen to be complementary in qualitative research (Yin, 2009). The work begin by reviewing literatures in the areas of study to identify where gap exist in line with my research objectives. In spite of knowledge management being a veritable tool in supply chain management, however, there has been limited effort in indentifying the impacts of knowledge management on supply chain most especially in emerging economy like Nigeria (Somuyiwa, 2009). This may not be unconnected with dearth of adequate information on the impacts of knowledge management on supply chain. The research is carried out within the facilities of Flour Mills of Nigeria Plc., group, a major manufacturer and marketer of; Flour, Pasta, Cement, Fertilizer products serving the Nigeria's 150 million populace with quality products. The reasons for the selection of the organization for this research are that the organization is a conglomerate with rich networks both within and outside the organization. The organization is an international organization that is expected to have international best practice in its operation. Also, the organization involves in almost all aspects of supply chain and logistics that include; Road Transport, Shipping, Trading Company, and Terminal Operation etc.

My role in the organization was in two folds: (i) as an Intern and (ii) as a Researcher. This dual role gave me direct access to the organization's processes, people and the suppliers. Also I was able to review company past processes documentation which also serve as my secondary data. For this research two sources of data is used – primary and secondary data. The primary data for this research exercise are sourced and collected through personal observations and structured interview. Based on these submissions I

established relationship (by way of Interviewing, Participation and Observation) with the key people in Supplies Directorate and all the other partners of the directorate both internally (Originators) and externally (Suppliers).

### **3.3 Research Strategy**

In their discussion, Saunders et al. (2009) which follow the earlier position of Yin, (2009) indentify some research strategies which include experiment, survey, case study, action research, grounded theory, ethnography, and archival research. Each of these research strategies can be applied for exploratory, descriptive, and explanatory research (Yin, 2009 & Saunders et al., 2009), while some of them clearly belong to either deductive approach or inductive approach. The advantages and disadvantages of each strategy depends on the type of research in question, the control an investigator has over actual behavioral of events, and the focus on contemporary as opposed to historical phenomena (Yin, 2009).

In further review of research strategy Yin, (2009), opine that a case study approach is a better method to apply when the research goal is at answering explorative research questions, when the control over the study situation is limited and the focus is on actual development in a social context. He also concluded that case study is the most preferred when the units of study are complex and hard to isolate from the real-life context.

As Yin (2009) states, the case study is a suitable strategy when a real life event e.g. processes or performance of particular organization could be investigated. He further states that it allows maintaining the important characteristics of the event investigated. In Blaxter et al. (1996) view, case study is suitable for researching a part of an organization with a focus on only one or few units or departments. It can therefore be concluded that the research strategy adopted for this study is adequate and appropriate in providing answers to research questions earlier raised, for validity assurance for the research.

Basically, for this research, methods of data collection include personal observations (since the research will be involved in the day to day running of the companies supply process) and interviews. Majorly, the data collection is performed using semi-structured interview with open-ended questions. Using semi-structured interview the exact answers needed could be gained. The used of structured questions is to get specific answers and

also to offer the possibility for the interviewees to express their views on the subject matter. As Blaxter et al. (1996) state, interviews in form of semi-structured questions can be very useful in situations when it is unlikely to get access to certain information by observation. Also Yin (2009) states that usually in case studies, one of the most important sources to gain information is the usage of structured questions. Therefore, performance data and values are received and analyzed in order to gain the information needed for the empirical research.

From above submission and having in mind the overall goal of this research exercise which is to assess Supply Chain enhancement through knowledge management, the research questions of this study which mainly focused on explorative issues and this makes it suitable to be answered largely by a case study in contemporary business environment. Also, the interaction between supply chain and knowledge management is complicated; knowledge management activities can have both positive impacts and difficulties on supply chain management. Therefore, case study approach is suitable for this study.

### **3.4 Credibility of the Research**

Yin (2009) outlined four design tests for qualitative study as construct validity, internal validity, external validity, and reliability. Similarly, Saunders et al. (2007) list the two particular emphases on research design –reliability and validity– so as to reduce the possibility of getting the wrong answer for the research question.

Validity is concerned with “whether the findings are really about what they appear to be about” (Saunders et al., 2007). General acceptability, or sometimes being referred as external validity, is about the extent to which the research results are generally acceptable. Constructive validity was achieved through covering both general questions concerning the effects of the distinguishing attributes of the study, as well as the specific questions asking for concrete example and solid reasons, in the interviews. Internal validity was achieved through the tight control of interview questions with pre-defined categories with a strong emphasis on comparability. In this study the result of the research were analysis using theoretical framework that is well supported with theory and survey.

While, reliability refers to the extent to which the data collection techniques or analysis procedures will yield consistent findings (Yin 2007). The threats to reliability include subject or participant error, subject or participant bias, observer error, and observer bias (Saunders et al., 2007).

In research the main aim of reliability is to ensure that a set of data analysis under a particular result if it has to be done by another researcher. This is usually encouraged in research to eliminate or reduce bias and errors. The intention of this research is to achieve a high level of reliability, to this end following strategies were adopted;

Pilot study – before this research actually started a pilot study of case study was conducted to actually determine the major players and the structure of the supply chain of the case study.

Also, a semi-structured question was generated for the purpose of the interview. This ensures similar questions were asked across the chain and this was achieved through an interview guide. This also eliminates the possibility of relying on intuition.

A thorough study of the company reports and working documents, this was done to actually substantiate the responses of the interviewees. This was possible as a result of being an Intern in the purchasing department of the organization, being an Intern exposed me to policy drafting, raising of purchase requisition and contract negotiation with partners in the supply chain.

Without prejudice to the above mention strategies the following may reduce the reliability of this methodology; inability to select a large set of interviewees; unavailability of key informants and other researchers.

#### **3.4.1 External Validity**

External validity is described as the degree at which research findings can be generalized for replication in other environments and times (Maxwell, 1992; Onwuegbuzie and Johnson, 2006). From various literature submissions like Maxwell, (1992) and Onwuegbuzie and Johnson, (2006) opined that external validity in qualitative research work like this have generated a lot of are arguments among commentators on the subject. Various errors and biases are identified to make external validity in qualitative research difficult. External validity might occur at the research design/data collection, data analysis, and/or data interpretation stages of the qualitative research process. These



threats are as follows; temporal generalizability; population generalizability; ecological generalizability; researcher bias; reactivity; order bias; evaluative validity; effect size; action validity; catalytic validity; communicative validity; investigation validity; interpretative validity and consensual validity

In this research having known all these validity challenges associated with this kind of research effort were made to reduce validity challenge. One of this effort is my presence in the organization as an Intern while carrying out this research work, this assure higher validity because any information supply by the interviewees can also be observed in the day to day operation of the company. This reduces tendencies of the interviewees hiding vital information that are necessary for high credibility and validity of this research. When the responses received are contrary to what is noticeable more information into the history of the organization are sourced to get more insight into past effort of the organization in line with my research objective. With this kind of interaction used in this research, if this research is carried out in other organization there is high tendency that result of finding will be similar if the same method is adopted.

### **3.5 Data analysis procedure**

Basically for this research, content analysis is used in the analysis of both the primary and secondary data. Content analysis has been adjudged by researchers as the most flexible method for analyzing text data and interview (Cavanagh, 1997). It describes the analytic approaches which ranges from institution, impressionistic and strict text analysis (Rosengren, 1981). To this end content analysis is therefore employed in the analysis of data gathered in the course of this research.

To this end samples for this research are drawn from each unit that made up of the supply chain. This is adopted to ensure that each unit that made up of the supply chain is adequately represented. Also, each head or representative of the unit that made up of chain is selected for interviewed. The individuals that raise Purchase Requisition (PR) in all the units in the supply chain in Flour Mills Nig Plc are referred to as Originators. The Originators raise requisitions on behalf of their departments and units. The list of those interview is attached as appendix II.

A question guide is used so as to ensure that the same set of questions is asked across the chain. The said question guide is attached to this work as appendix 1. In engaging the

interviewee a minimum of 30 minute was spent with each interviewee. The questions seek to answers the earlier research questions raised; the procurement experience in Flour Mills of Nigeria Plc; the challenges faced in supply chain; the impacts of these challenges on the organization; what are the likely impacts of knowledge management on the effectiveness of supply chain and the likely hindrance to effective knowledge management implementation in supply chain. The choice of semi - structured interview in this research was formed on its flexibility in allowing for appropriate and precise responses as well as in-depth discussions on the issues being discussed. The responses gotten from these questions were manually recorded.these view were presented and analysis in chapter 6 of this thesis.

## CHAPTER FOUR

### 4. Literature Review

This chapter focuses on reviewing of existing literature with the central themes of this literature review are the concepts of Supply Chain, Supply Chain Management and Knowledge Management.

#### 4.1 Supply Chain Overview.

One of acceptable definitions of supply chain is given by Cox, (2007) where he defines supply chain as thinking devoted to discovering tools and techniques that in turn leads to operational efficiency and effectiveness. This is put in place to ensure a network of continuous support for supply of product both internally and externally.

This is done to ensure a through delivery channels that is created internally and externally to support and supply existing corporate product and service offerings to customers. In his conclusion, supply chain is the process of co-ordination of production processes and materials in the most effective way among the partners within the value chain. In their view Bowersox et al., (2010), opine that supply chain has emerged to become a competitive point for organizations. This is for the fact that supply chain cut across most aspects of an organizational processes from idea conception to manufacturing and marketing. Wadhwa and Saxena (2007) describe supply chain as important aspect of business strategy that require integrated decision making.

Supply chain includes all activities that have to do with receiving of all material inputs for the organization to perform its operation in the most efficient way. This includes inventory management, procurement, supplier management and efficient flow of information among the internal customers that cut across functions in the organization (Arnold and Chapman, 2004). Due to the inter dependent of these activities in supply chain, this makes it to be so dynamic to manage. It therefore requires much attention to get it developed and groomed further as business process requires to achieve further overall company's objectives. As a result of complexity of activities involved, an organisation practically cannot perform all its activities alone. Collaboration is necessary among other organisation for effectiveness in terms of time, cost and performance. This collaborative nature of supply chain is promoting the concept and practice of

specialization among organization participating in the processes involved (Bowersox et al., 2010). Each organization focuses on a particular area of competence and then depends on other partners in achieving other parts of the process.

These interdependence among organization in supply chain has enhances the pro-activeness and responsiveness to customers' needs and great reduction in time to bring new products and services to the market in order to meet the continuous change in the taste of customers. This leads to increase in creativity in the system and also changes business dynamics and priority often. (Wadhwa & Saxena, 2007; Bowersox et al., 2010)

As the disruption in business environment, organizations now focus on the arrangement and re-arrangement of supply chain processes and activities to create further opportunities in terms of cost reduction, market responsiveness, facilities utilization and human resource optimum utilization. (Christensen et al., 2002)

#### **4.1.1 Supply chain management**

Supply chain management can be said to have originated in the early 1980s (Oliver and Webber 1982). The duo discusses the potential benefits of integrating the internal business functions of purchasing, manufacturing, sales and distribution. This phrase appears virtually everywhere in today organization, it's appears in many company strategies and reports, practitioner and academic journals and texts. However, Harland, (1995) is of the opinion that there is little consistency in the use of the term and little evidence of clarity of meaning. He is of the view that it appears to be a term used in several emerging bodies of knowledge which, to date, have remained largely unconnected.

Supply chain management involves movement of all materials and processes from idea conception to final product development (Tan et al. 1998; Berry et al., 1994). Supply chain management involves how organizations in the network leverage on their processes, capabilities, relationship and technology to increase their competitiveness. How organization will extend its influence from within to other organizations is partnering in creating better value through joint optimization for better efficiency (Ellram 1991). Jone (1995) is of opinion that supply chain management encompasses integrative approaches that include planning, movement and control of material from different

suppliers to the final user. While, Christopher (1992) describes Supply chain management as synchronization of both the upstream and downstream linkages through different activities and processes in creating value in the form of product and services. Also, Lee and Billington (1992) propose four important areas where supply chain management concept is applicable which include the following:

- First, the internal supply chain that integrates business functions involved in the flow of materials and information from inbound to outbound ends of the business.
- Secondly, the management of dyadic or two party relationships with immediate suppliers.
- Thirdly, the management of a chain of businesses including a supplier, a supplier's suppliers, a customer and a customer's customer, and so on.
- Fourthly, the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers.

Supply Chain management therefore consist of firms collaborating to leverage strategic positioning and to improve operating efficiency (Bowersox et al., 2010). They submit that supply chain management is the art and science of managing this complex network of interrelated systems and their components. It also encompasses identifying goals and objectives of the supply chain and outlining policies, strategies, controls for its effective and efficient implementation. As indentified above, it can then be concluded that supply chain include the following major processes.

#### **4.1.2 Major Processes in Supply Chain**

Supply Chain is a complex process that involved so many activities that is difficult to touch within the little scope of this work. The area of reference will be within the following; Procurement, Inventory Management, Internal Stakeholder Engagement and Supplier management.

##### **4.1.2a. Procurement**

Lee and Billington (1992), describe procurement as the acquisition of goods and services at appropriate price, quality and time for the need of the buyer or purchaser. It is also include all other value addition services and activities that enhance the goods or the services like mode of delivery, handling for the best possible cost benefits for the organization. Categorisation of procurement can therefore be said to be organization

based and this include; direct and indirect procurement, Work-in-progress, Services and Fixed asset etc (Lee and Billington 1992).

As identify by Lee and Billington (1992), direct procurement is those goods that go into the production process of an organization like raw materials, spare parts. In the manufacturing related environment, direct procurement has great impact on the performance of the organization; its performance determines greatly the reputation which organization has in terms of quality, reliability and cost effectiveness of its final product and services. Since the product represents the organization in the public, this aspect of the organizations is of high importance. Organizations with tradition of excellence focus on how the process can be improved upon and they keep on working consistently on how things can get better (Lee and Billington 1992).

Indirect Procurement is that external value acquired and necessary for smooth running of an organization as an integrated entity. Since an organization cannot achieve its desired competitiveness with production activity alone, therefore organization has to include other support services for smooth running of the organization (Bowersox et.al, 2010). Proper management of procurement activities in this area are important in creating enabling environment in the organization. It also form greater part of procurement activities of most organizations. It needs thorough evaluation before choices should be in order to reduce procurement expenses through pruning of waste and other value eroding transactions. In view of Bowersox et.al., (2010), for an organization to achieve this, the people undertaking these activities must be adequately informed and educated to know the impact of such transaction on the organization.

#### **4.1.2b Inventory Management**

Inventory management is the process of storing of goods which include raw materials, spare parts, products and other material inputs in continuous production process in a safe and cost effective way till the time of its usage (Frankel, 2006). Inventory management is an important aspect of supply chain because substantial parts of working capital are in one form of inventory or another. Bowersox et.al., (2010) opine that holistic management attention is required because of the difficulties associated with management of inventory especially in big manufacturing companies where a lot of inventory has to be kept for continuous running of the system. He stress further that these difficulties arise

from non predictable of the usage of such material. If this aspect of inventory is to be managed with minimal cost and little disruption on the operation of the organizations, all the personalities involved in both procurement and usage must collaborate very well through sharing of information (Ayers, 2003). These kinds of interactions are needed for proper planning to get abreast with new technology and usual changes in the modern technology so that the inventory will not become obsolete. Another important way is suggested by (Frankel, 2006) that inventory can be kept at lowest possible level through collaboration with the suppliers through sharing of information systems linking the parties together in meeting their need without necessarily keeping more than require inventory of materials.

#### **4.1.2c Internal Stakeholder Engagement**

Frankel, (2006) is of the opinion that stakeholder engagement is important in supply chain related functions because the activities the supply chain involve in are majorly on behalf of other members of the organization. For the activities to be performed with minimal challenge, all the stakeholders should have a forum where the interests of all are aligned (Frankel, 2006). Wadhwa and Saxena, (2007) argue that this is necessary because different functions within an organization use different factors in decision making. For instance, Frankel, (2006), opine that an accountant usually focus on cost, an engineer may be interested more on functionality, supply chain focus on service delivery of the supplier. In all this considerations, all are working to achieve singular goal of improving productivity in the organization but in different terminology. Stakeholder engagement is of great importance because it helps in harmonization of positions for betterment of the organization. To reach this end communication and sharing of information are the essential tools in achieving this value addition among internal customers in the chain. (Frankel, 2006)

#### **4.1.2d Supplier Management**

Supplier management is an important strategic function that supply chain must pay the necessary attention to (Frankel, 2006). The factors that make this aspect to be difficult to manage include the differences among the organizations in the value chain in terms of culture, practice and the level of development. Bessant and Tidd, (2007) substantiate this

point by saying that for an organization to succeed in the present business environment, manager need to extend leadership beyond their organization, that ability to manage other partners is a great leverage. In the view of (Cox, 2001), the power variable must be well studied and understood in managing buyer supplier relationships because the same approach for all the suppliers cannot achieve the competitiveness that supply chain management aspire to achieve. Organizations have used different approaches in achieving robust supply chain relationship management. (Cox, 2001) argues that western organization adopted Japanese's lean approach but with minimal success as recorded in Japanese industry because of the difference in the culture and management practice in Japan and that of western countries.

Having indentified the processes in supply change, Cox (2001) opines that the following factors affect the changes experience in supply chain processes.

#### **4.1.3 Change Drivers in Supply Chain**

As established earlier, supply chain processes and practises are changing and certain and this can be explained by the following factors: Technological Development, Environmental Factors, Product Design Strategy, Market Demand and Legal Demands. The major five factors discuss below have been indentify by Cox (2001) as the most pressing factors on supply chain process.

##### **4.1.3a Technological Development**

Cox (2001) opines that technological advancement has been a major contributor to changes in supply chain activities and practise from inception of human race (agricultural era – to mass production – this information age). As the quest for knowledge acquisition and development increases so is the approach to business activities (Cox, 2001). As established earlier that supply chain cuts across almost every aspect of production processes, the development in technology is also bringing in new approaches into product processes. In the same vein, the emergence of internet and information technology brings much more changes into the way business activities are arranged. The exchange of information that used to take days among partners in supply chain could now take only few seconds through few clicks of computer mouse. Development of different business intelligence tools like Microsoft Dynamix, SAP,



Monitor, Oracle etc. have made planning among the partners in a value chain to relate in more effective ways like never before (Bowersox et al., 2010; Cox, 2001).

Manufacturing equipment technology is not static as well in today's manufacturing environment; a lot of features can be incorporated to accommodate diverse needs of different customers and markets (Bowersox et al., 2010).

#### **4.1.3b Environment Demands**

The development of industrialization has resulted in different environmental issues like green-house effects, global warming, pollution and degradation etc (Dorber, et. al 2001). All these challenges have resulted in a lot of awareness about environmental issues which result in various demands among the stakeholders (Dorber et. al 2001). As these trends continue, the players in the business world have seen the trends as unsustainable and different interest groups and stakeholders are taking different positions to reverse the adverse trends, in this agitation, supply chain is also a major business component that is seriously affected (Cox, 2001; Dorber et. al, 2001; Lee, 2010).

Lee, (2010) in his opinion said that Organization in order to reduce their impacts on the environment, are changing materials in product processes, modes of production, transportation, sourcing methods etc. Each of these identified scenarios brings major changes into supply chain activities and modes. For example an organization using synthetic material may be demanded to change to organic materials in order to reduce environmental effects and consumption patterns of other important resources like water and energy (Lee, 2010). As these kinds of different demands are on increase, organizations have seen compliance as the only option to win the heart of their consumers and partners even when such change is difficult to manage; organizations oblige in order to remain competitive and acceptable among other players in the market. (Lee, 2010)

#### **4.1.3c Product Design Strategy**

Competition among industries in the new market order is so fierce, these have made organizations to devise and develop different models of operations and development of their products, these new approaches include that of Lean Manufacturing, Manufacturing

Postponement, Collaborative product development etc (Cox 2001). Christensen (2002) opines that different manufacturing or product development requires distinctive approaches and in the same way require unique supply chain support requirements. All these changes cannot be ignored by organization in order to cope with competitions among other competitors. Another important reason as suggest by Cox (2001), why new product strategy are embarked upon is to get to market on time because of urgency that has become constant variable in business through great reduction in the product lifecycle as consumer taste are changing by arrays of new products that are flocking market on the constant bases (Cox, 2001). This also encourage collaboration among different partners as it is becoming more difficult and uneconomical for an organization to provide all its need; to cope with time to market and partake in innovation opportunities, to create higher net value, different approaches needs to be tried as situations demand.

#### **4.1.3d Market Demand**

The rates of development in industrial settings have brought about a lot of innovative products choices for the consumers like never before in any human history. These opportunities have made the consumer's appetite to be in constant change thereby making various requests to the manufacturer within short time frame. The organizations that have claimed success on innovation have paid much attention to this important business development. As organization is striving to meet this challenge, their supply chain is constantly at the receiving end in terms of changes in materials, partners, process etc. The competitiveness of any organization depends on how these variables could be managed with appropriate pro-activeness and decisive responsiveness. (Lee, 2010)

#### **4.1.3e Legal Demands**

Another important factor that is tilting the head of supply chain is legal demand in an environment an organization aims at performing its production activities or marketing its products (Lee, 2010). The legal requirement may come in different forms; a country may demand that products to be marketed must be manufactured within the country. In some cases, certain conditions like type of material used, mode of transportation etc. All these results in changes in supply chain processes among organization and the requirement is

not constant as new law arises as a result of different developments. The relationship among countries like European Union, ECOWAS, BRICS and the likes also affect the legal environment the business activities are also affected from the legislations emerged through these relationships. (Lee, 2010)

## **4.2 Knowledge Management**

The concepts of knowledge is being seen in organization today as one of factors of production and development, which an organization must be developed and managed (Durmaz et al., 2008). In this context, “knowledge based development” has gained popularity as a powerful strategy for sustainable organization (Yigitcanlar and Velibeyoglu, 2008). If knowledge is a flow of activities there is need for its management. Therefore, Knowledge management can be described as development of capacities through information and past experience that are at the disposal of an organization which can be used for further development and grooming of the organization (Nonaka et al; 2000). It is believed that all organizations have been under utilizing their potential both at the corporate level as well as the individual employee potential. Knowledge at different organizational life and activities are seen as great asset that needs decisive attention and infrastructure to support its recognition and usage for the betterment of organizations (Nonaka et al., 2000).

Knowledge Management is seen from different perspective by different people and organizations, some seen it from perspective that it is information, information sharing, and information technology (Nonaka et al; 2000). Others see it from the perspective that individual employee can be managed better to add more value to the organization by development of consciousness of other development opportunity within the organization through other employees interaction (McDermott, 1999). Another school of thought is also of the opinion that organization’s experience can be used for further development with appropriate mechanism in place. The challenge for knowledge management is that there is no consensus agreement with what it is among the stakeholder in organizational development (Nonaka et al; 2000). The abstract nature of knowledge management is still widely in existence, if the knowledge capability at both individual and organizations level will be nurtured to maturity, the real foundation and structure for knowledge capturing and utilization has to be in place (Nonaka et al. 2000; Mcdermot, 1999; Ngai &

Chan, 2005). According to Nonaka et al., (2000) it divided knowledge into both explicit knowledge and implicit knowledge. Explicit knowledge is described as knowledge that can be easily explained and put in perspective. On the other hand implicit is the type of knowledge that is difficult to explain and put in any form of perspective.

Either the explicit knowledge or the implicit knowledge, effort is required to maximise these knowledge base. For Knowledge Management practise to be effective, certain conditions needs to be in place to enhance maximization of knowledge for the advantage of both the individual and organization as a whole. The important ones among these desirable conditions are: learning organization culture, good communication channels, leadership commitment, and rich network development; both within and outside the organization (Nonaka et al. 2000);

Stewart (1996) opine that learning organizations are organizations that have appropriate fundamentals to reflect on the series of event within the organization as way of coming up with values and assortment needed to be developed from such experience. Good communication in knowledge management cannot be over emphasized because all interactions start with communication. Providing an environment where information flows from both top down and down top will groom knowledge management practice (Stewart, 1996), this can only be achieved through a committed leadership. Leadership commitment is an important component of knowledge management because direction in which an organization will follow purely base on leadership principle (Stewart, 1996). Also, in order to develop a robust Knowledge Management a viable rich network development is needed. Rich network development is base on relating with partners with mutual respect (Emberg, 2010). This is in support of the value in team work that each party sees others as complementary in the system in which they are all contributors. Rollag et al., (2005) submitted that this practice is important in managing human resource in organizations to get the best possible from new hires and the old ones because required fluidity will be feasible in all interaction.

#### **4.2.1 Learning Curve Development as Essential in Knowledge management**

Learning curve as a concept believes that previous experience from an activity can aid proficiency in undertaking such or related task in the future (Stewart 1996). From the

idea of learning curve, it suggests that organization will eventually be better from undertaking a task over and over again. In reality, it is seen as valid but based on certain conditions that must be put in place before an organization or individual can achieve this proposition from learning curves advocates. This idea is related to what knowledge management is aimed at achieving by reflecting on past experience, resources and activities to fashion out ways in which future can be enhanced.

In practice, organizations have not been able to maximise all these potentials courtesy of poor attention. From various authors and researchers (Nonaka et al, 2000; Emberg, 2010) the enabling environment to bring past experience to its full potential has not been judiciously managed. The consistent challenges on the way of learning curve development include communication challenges, poor team grooming and development and leadership's little attention (Nonaka et al, 2000). All these aforementioned result in inability of organization not being able to harvest from the past for future development. Importance of environment is recognised for robust knowledge acquisition, but because of the abstract nature of Knowledge, attention must be on conditions under which the players on knowledge management should operate (Nonaka et al, 2000; Emberg, 2010; Ngai & Chan, 2005). This is similar to what is describes as community of practice (Handley et al, 2006); knowledge can be valuable when the people in the systems pay attention to it and recognize the reasoning behind such knowledge needs. The structure of the organization and how the employees are managed become an important variable in generating and capturing of appropriate knowledge. The individual where tacit knowledge resides must be motivated enough to be ready and open to release such knowledge (Nonaka et al, (2000). With consistent problem with knowledge management, the people aspect needs new attention to foster knowledge flows against the popular view that focus on technology (Mcdermot, 1999; Ngai & Chan, (2005). Interaction is recognized as very key before all the system can be synchronized to achieve more effectiveness that knowledge management aims at. The ideal that knowledge management is equivalent to body of information like database, documentation, books are faulted because all these are knowledge representation purely based on the past events but the idea of knowledge management is based on knowing towards value

addition to the future (Nonaka et al, 2000). For the representation to add the expected value it must be reconceptualised in line with new expectation (Gourlay, 2001).

Over reliance on information technology in knowledge management is faulted (Mcdermot, 1999; Ngai & Chan, 2005). They opine that the appropriate balance of all factors that are essential to knowledge management is essential to move the practice forward towards real organizational development. There must be holistic view and synchronization of all organizational components like information technology, strategy, culture, people and activities (Mcdermot, 1999; Ngai & Chan, 2005). Another important factor identified as important to achieve robust knowledge management is leadership commitment (Wadhwa & Saxena, 2007). This is so because it is the leadership of an organization that gives direction and it hinges on how employees interact, as interaction is being seen as an important value in knowledge management. The structure must facilitate learning (learning organization). Learning organization is defined as an organization that is excellent in generating, acquiring, codifying, and measuring knowledge as tools to gaining new approach in transacting its business (Mcdermot 1999). A learning organization can achieve the aforementioned task for knowledge by identifying where it aims at being and designing pathway to the desired destination (Mcdermot, 1999). From the above, it can be deduced that the influence of leadership is reiterated because it defined its direction. When this important aspect is taking care off, there will be shared vision among all the members of the organization for real knowledge development (Mcdermot, 1999). In order to really drive the knowledge management in any organization the leadership must go beyond conventional leadership to what is term collaborative leadership, a form of leadership in which all the parties in the process are fully engaged with the team objective (Realm, 2006). He further describes such leadership as meaning makers, that bring optimism, passion and forward looking into leadership of the team. The solutions normally come from multi-dimensional angles and the leader attributes such success to the team as a whole. Scharmer, (2001) also describes the necessary skills of a real leader in managing knowledge as “Self-transcending knowledge” the ability to predict future. Before a leader can nurture such futuristic agenda to maturity, he or she needs other people in the team for necessary buy-in through motivation and demonstration of trust for other members of the group.

### **4.2.2 Influence of Knowledge Management on Organizations**

Knowledge management has potential of assisting an organization to develop responsiveness capability and meeting consistent changes in business demands (Mcdermot, 1999). With appropriate fundamentals in place, an organization can innovate better (Bessat & Tidd, 2007; Nonaka, 2000), can increase profitability and competitiveness among its peers. From all the organization that have been able to claim success in the area of innovation for example: Apple and Google, have consistently attributed their success to the enabling environment for knowledge sharing activities for their employees. The engine of development of 21<sup>st</sup> century has been attributed to knowledge development (Rollag, et al 2005).

As the rate of technology is increasing the products and services availability in the market, an organization that value knowledge management knows where it wants to be and strives to develop ways of getting there on a consistent basis (Nonaka, 2000). Since this expectation is not a destination, the organization must be continually making needed adjustment and refinement needed on this unending journey in order to ensure that each time, it has all needed skill for success. The environment for learning must give room for questioning from all and sundry as a way of helping them to add value (Rollag, et al., 2005)

Both tacit and explicit knowledge cannot be separated because one depends on the other. In short, individual is critical to knowledge management either implicit or explicit. For individual to be ready to share his or her knowledge environment that supports the mechanism must be in place i.e. knowing the importance to organizational growth and the value that organization place on it and how the individual that support the principle is valued (Rollag, et al, 2005).

### **4.3. Knowledge Management in Supply Chain**

As the supply chain intricacies are being described in relation knowledge management, supply chain creates great opportunity for the practise of knowledge management because of its rich linkages in the networks (Bessant and Tidd, 2007). Lee (2010) advocate for continuous changes in the chain through the series of factor, market demand, Innovation growth through technology, product development strategy

All these factors are not static, so supply chain fundamentals change on a constant basis and real success for managing it in an organization now becomes the difference between lagers and the performers (Lee, 2010). On many occasion the approach used before is needed to be re-adopted based on prevailing circumstances at other times. (Christiensen et al., 2002; Bengtsson and Berggren, 2008)

Based on these continuous evolution in supply chain, knowledge acquire in implementation of a project is needed to be shared, measured, and stored, for future usage in the organization (Handley et al, 2006). This is in line with the principle of learning curve that states that an individual, organization should gain more proficiency each time a similar task is being undertaken (Stewart, 1996). With this, organizations get a lot of references and assets that development and responsiveness could come from but the reality is still showing a big gap in managing this in organizations. One cannot say that there is a particular way supply chain can be structured in an organization but prevailing situations determine best design per time (Lee, 2010). In the supply chain system, the approach is shifting away from function to process where the overall goal achievement becomes most important (Bowersox et al. 2010). The focus must be on how interdependence of function is recognised as essential for total organizational success. Due to the complexity of supply chain managing across functional boundaries is the key for success. Another important variable why knowledge management mechanism will enhance supply chain is based on the argument of (Bowersox et al., 2010) that either centralization or decentralization of organization may not matter but on what is need for maximum result per time is proper adjustment to new reality.

Supply management main activity for success must be on collaborative relationships between an organization and the partnering organization in the chain (Bowersox et al., 2010). They submit that proper supply chain design has great capacity of enhancing knowledge management in organization because of connection of the function with many stakeholders within and outside the organization.

#### **4.3.1 Challenges for knowledge management in supply chain**

According to Rollag et al., (2005) knowledge management is an approach that enhances human resource management. They submit that information can easily be accessed from



archive with appropriate interaction that adds value to it. Bessant and Tidd, (2007); Bowersox, et al., (2010); and Cox, A. (2001) attribute the following challenges to knowledge management maturity:

➤ **Managing both personal and others' assets**

As observe by Bessant and Tidd, (2007); Bowersox, et al., (2010); Cox, (2001) managing supply chain require incorporation of both internal and external stakeholders in a synchronised way for enhanced organizational success. Managing these different autonomous entities could be a difficult task as there are various approaches that will be needed for managing each of them. Some of the factors that have been identified to attribute for this is the difference in the power play, different level of trust, age of the relationship (Cox, 2001). It therefore can be concluded from above submission that it requires above par leadership.

➤ **Communication**

Managing communication within supply chain networks is a major task (Cobb, 2006). Communication is defined as the exchange and flow of information from one source to another. Before communication can be regarded as effective, the receiver must understand the context in which the sender is operating (Cobb, 2006). Organizations can only work in an integrated way when there is understanding; before this understanding can be established interaction is an essential component. For good communication to be established as so much needed in supply chain processes, inter functional and inter organizational barriers must be removed. Interest must be geared towards learning the communication approaches among the different partners. (Cobb, 2006).

➤ **Management attention**

Management attention to how knowledge will be generated, captured and stored in the appropriate format that will make it to valuable in organization is still at the elementary in most organizations (Bessant and Tidd, 2007). This is due to urgency that most projects in supply chain come along with that blind fold leadership in organizations from tapping into this potential. Leadership interest is identified as a major factor that can remove the impediment on the way of knowledge management in the organizations base on the fact that organizations get inspired through leadership direction. (McDermott, 1999)

Another ways in which the knowledge management practice can be well established in organization is by including it in the key performance indicator (KPI) when planning. This will make the project manager to create real enabling environment that support its practice.

➤ **Codification of knowledge (Documentation)**

The abstract nature of knowledge makes its capturing, codification and storing to be very difficult (Nonaka 2000). Only information can easily be captured, knowledge cannot be captured or stored but can only be generated through information and interaction among the parties that have the information or partake in the event that result in the information (Yigitcanlar, 2009). According to Mcdermott, (1999) knowledge management practice can only be fruitful until organizations recognize that fact information technology is just an enabler for real knowledge, that the conditions that give room to reflection and genuine interaction among the parties involved in organization are still the missing link. The reasoning behind storing of such information need to be consistently shared among the people that could benefit from such expected knowledge.

## CHAPTER FIVE

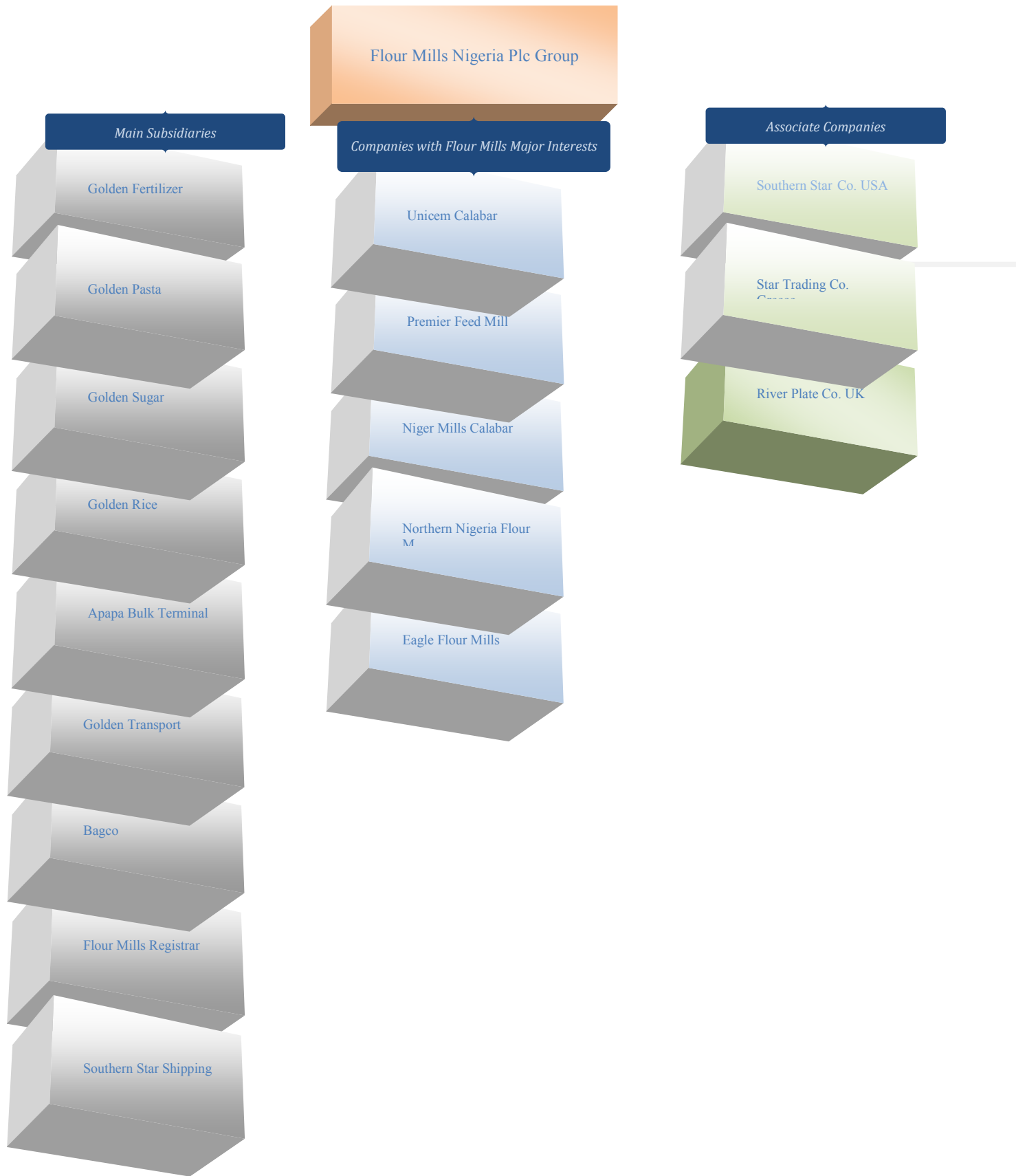
### 5. Case Description

This chapter gives an overview of the Flour Mills Nigeria Plc Group, its machinery in the execution of supply chain activities. It also gives an overview structure of both the Flour Mills Plc Group, associate companies and its subsidiaries.

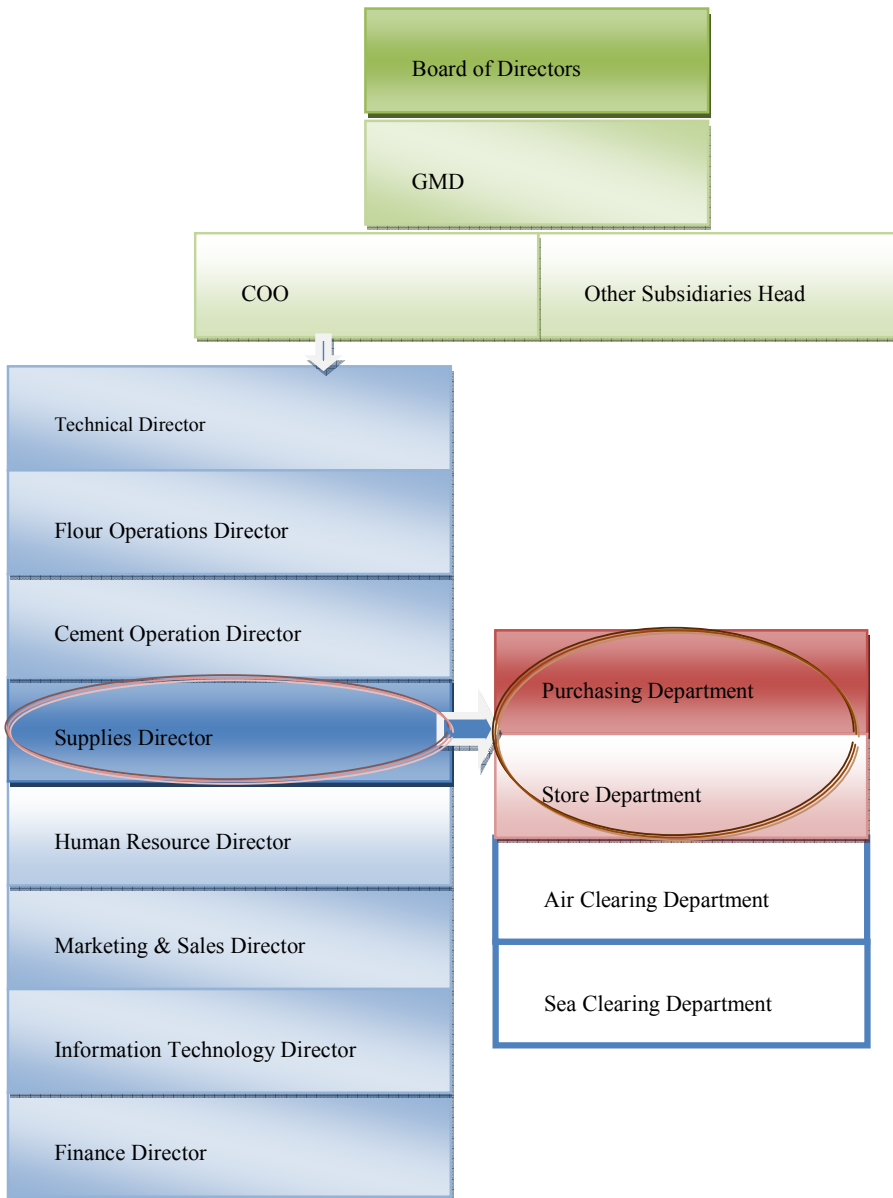
#### 5.1 Introduction of Flour Mills of Nigeria Plc Group

Flour Mills of Nigeria Plc is an industrial conglomerate operating in diverse business interests in Nigeria that include the following: Flour Milling, Pasta Manufacturing, Fertilizer Blending, Cement Operation (Packaging), Port Operations and Agricultural Businesses (Sunti and Kaboji Farms) (FMN Annual report 2010). The organization also involves in other Logistics businesses: Golden Transport Nigeria Limited, Southern Star Shipping Company to support its huge logistics business needs. In addition, there are three associate companies overseas that the company closely works with for its international procurement purposes: Star Trading Company, Greece; Southern Star Company, USA and River Plate Company, UK (FMN 2011). The company was established in 1960 by a Greek Business mogul and other Nigeria industrialists, listed on the Nigeria Stock Exchange in 1978 that resulted into diversification of its ownership structure, as at year 2011 the organization has over 68, 000 shareholders. The organization employs over 3,200 people for the main organization and its subsidiaries in Nigeria. Flour Mills Nigeria Plc Group bases its operation on the phrase '*Continuous Pursuit of Operational and Managerial excellence*' (Internet sources, database and the company website)

The research work is carried out within the Supplies Directorate of Flour Mills Nigeria Group. The Directorate is charged with the responsibility of all forms of procurement activities for the company; Materials, Stock items, Capital goods and Services and other value addition services; Clearing services for all international goods that arrive through Air and Sea Ports into Nigeria. The Directorate performs all these functions for Flour Mills of Nigeria Plc and most of its subsidiaries. With these internal customers, the Directorate manages the Supplier networks of over 700 with different forms of procurement related relationships. The procurement activities of the directorate also involve management of all procurement needs of the company (Company database).



**Fig.5.1: Flour Mills of Nigeria Plc and its Subsidiaries Structure developed by Fagade C.O.**



**Fig. 5.2: Simplified Organizational Chart with highlight of Primary Place of Assignment as an Intern developed by Fagade C.O**

The Directorate of Supplies can be described as the heart of Flour Mills Group. The directorate procures all the needs for both goods and services for others 8 directorates in the company and has procurement responsibilities for all the subsidiaries in the (fig. 5.1) either wholly or partially. The associate companies are partners for the directorate in facilitating all the overseas procurement needs for the Group. For facilitation of all these procurement transaction, the organization has given access to the database to selected members of the organization to raise purchasing request on behalf of their; departments, units, directorates, subsidiaries or projects. (Interview of Purchasing Department team)

For easy execution of these huge transactions within the group, the organization runs on Enterprise Resource Planning (Microsoft Business Dynamics 2009 also referred to as AX). The company migrated to AX from Navision in February 2009 which automate all the processes involved in converting purchase requisition (PR) to purchase order (PO) having pass through the bidding processes and the approval matrix on the database. Before the introduction of new ERP the company procurement processes were done manually, the new application has made the process relatively manageable as each originator of all purchase requests can view the status of their request online to know the state of the request. (Interview of Purchasing Department member and database)

Inventory management, there are different approaches to the management of stocks in Flour Mills Group. The stock items are kept in the store as consumables; the systems prompt the store department immediately the stock get to reorder level, then the purchase requisition is raised for replenishment. For other types of request it is made from the business unit that the item or the service is needed by the employee that authorization is given for such task.

Another important component of the Supplies Directorate is the engagement of the internal stakeholders (originators) across the organization and Supplier base with the organization which is well over 700 with diverse types of supply related relationships. This includes big corporations, medium and small scale organizations, with diverse period from a year old and those well above 20 years long relationships. The directorate also manages the procurement for all independent projects in the organization; like construction of Sugar Refinery Construction and West Mill Construction Project currently under construction while in the organization. (FMN Database)

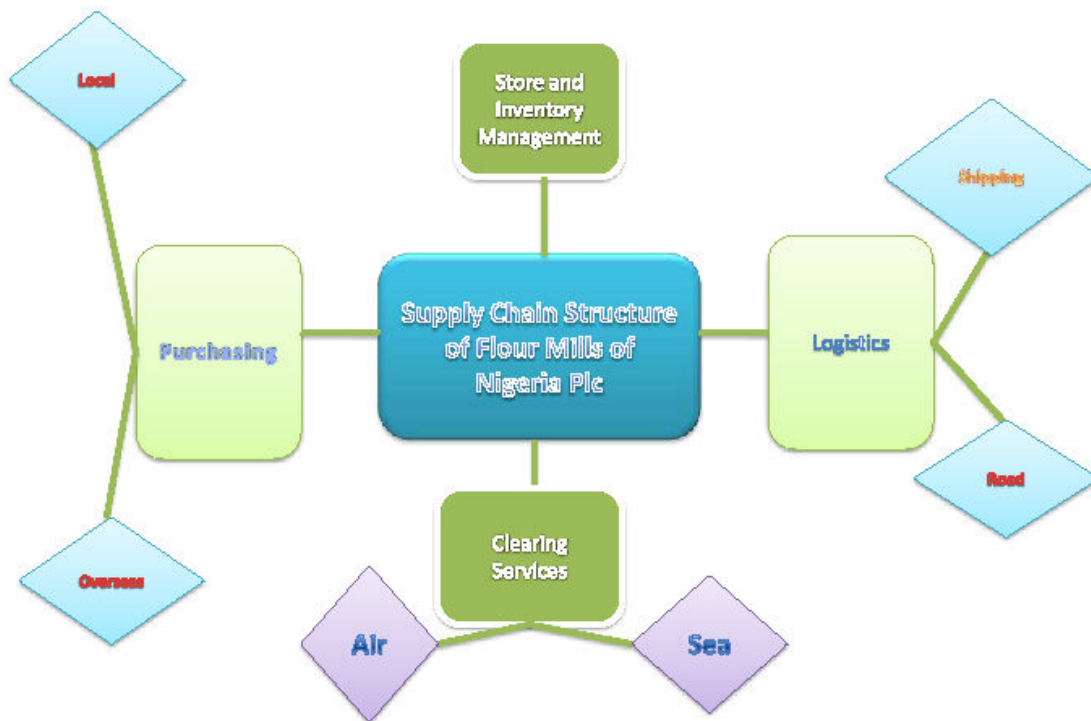
## **5.2 Supply Chain Activities in Flour Mills**

Supply chain in the Flour Mills of Nigeria Group comprises of procurement; Storage and Inventory Management; Sea and Air Clearing Services; Logistics solutions both Road and Shipping for both inbound outbound. A smooth supply chain is ensured in Flour Mills Nig. Plc so as to have a smooth flow of production processes, also to get the organization products to the vast customers in an uninterrupted way both within the shore of Nigeria and other West African countries where the products are consumed.

For inbound procurement activities for the organization to ensure that all the inputs for its production and services need come at appropriate time and quality in line with the organization quality statement. The procedures in place for different procurement of different items are different base on the sensitivity of items and its impact on the operation of the company. For example for procurement of cassava flour use in its Flour operation passes through the Quality Assurance department of the organization that the standard set for the item is assured by the suppliers as such item's cannot be asserted until being put under certain quality tests.

The organization also run a full fledge shipping company to get all its international input procurement into the country from overseas while other commercial airlines are engaged for air freight needs. For its local operations, the organization runs its own transport company; Golden Transport Company to cater for the organization heavy road logistics need - to convey its product to all its customer across the country and the neighboring West African countries.

The hugeness of the supply chain activities in the organization bring about complexity involve in managing all the parties involved; both the parties within the organization and its subsidiaries. Also, the complexity of the organization also makes it necessary that all other parties that are involved in the operation of these processes outside the organization to be favorably considered in organizing supply chain activities. These involve signing of Memorandum of Understanding (MOU) with Government officials of like Nigeria Customs Service, Nigeria Immigration Service among other agencies that are critical to smooth operations of the company. In the same vain the organization signs different Contracts agreements with different Suppliers' organizations for smooth running of supply chain activities of the company and all other organization dealing with in other countries. (FMN Documents)



**Figure 5.3: Simplified Supply Chain Structure of Flour Mills of Nigeria Plc developed by Fagade C. O**



## CHAPTER SIX

### 6. Analysis and Discussion

#### 6.1 Constraints Facing Supply Chain

As earlier reported in the problem statement, that supply chain there are complex and numerous decisions making process among organizations in the chain (Terpend et al. 2011). From the review of supply chain management literature by (Frohlich and Westbrook 2001; Vickery et al. 2003) reveal that supply chain critical for organizations strategic planning for development towards competitiveness.

Beanmon, (1998), opines that the likely constraint in supply chain include poor communication network, poor planning, poor inventory management and these are generally categorized as strategic level planning problems. The intention here is therefore to investigate likely constraint in the case company under the following sub-headings:

#### **Communication:**

From the literature it has been established that communication is veritable tool within an organization and it is regarded as life wire of any organization. In identifying challenge pose by communication inefficiency, Enberg et al., (2010) view communication across the chain as a consistent challenge that organizations have not been able to overcome, the situation at the case company is not an exception.

One of the reasons why communication is essential in modern day supply chain is that Purchasing Requisitions are made at different sections of the organization. This is usually done by originators, and originators are the major components in the network. They make purchasing requisitions on behalf of their units, sections and departments, being at different units, sections and departments of the organization it is expected that they communicate effectively.

It was found out in the case company that communication is one of the major constraints in effective performance in supply chain. This is traceable to the originators, as a result of being at different segment of the organization and their ineffective communication. They failed to properly communicate their purchase requisition to the store department. This in turn has led to rotten of some materials in the store.

A little progress was seen in the case company in ensuring that communication problem in the supply chain is at lowest ebb. The company was able to achieve this by putting in place the state of the art Enterprise Resource Planning (ERP) tools, internet, and intranet across the entire network within the organization but without the external networks. This state of the art tool has changed the way the organization processes its supplies requisitions and storage of inventory.

As established in the literature over reliance on technology is another barrier to effective communication in supply chain. This was also evident in the case company, where it was found out the supply chain totally relied on the ERP.

From the above submissions and findings it can be inferred that communication in supply chain most time is one sided as evident from the case company. This is in line with submissions in the available literature on supply chain; For example Shin et al. (2000) opine that information integration is an important component of supply chain robustness. For a supply chain to be complete for superior performance there must be an adequate integration of the components. This in turn will allow for information integration and sharing, which will in turn increase both institutional and individual capabilities. As found in the literature by Bowersox et al., (2010); supply chain is complete coordination of material and all the stakeholders in the value chain and is usually achieved through adequate communication.

### **Planning:**

Different authors have described planning as core of supply chain success (Bowersox et al., 2010; Wadhwa & Saxena, 2007). Planning is not complete until all people, functions and partners that may need information in the supply chain is duly involved in the planning.

Authors of supply chain literature like Bowersox et al., (2010); Wadhwa & Saxena, (2007) are of the opinion that planning in supply chain resides at different segments of the organization; not completely integrated across all parties involved. It was found out in the case company that planning resides at each departmental level and being released to other departments and functions when such planning information is required for its business. The planning across the chain is not properly integrated across parties in the

case company; each department in the company could be regarded as independent in the area of planning.

Also, identified is inadequate planning and improper coordination of the supply chain. This in most cases has led the organization to face challenges of urgent ordering of materials and services because other functions do not know the next line of action in the other arms of the organization. Evidence gathered from the case company revealed that this deficiency in the system has turned important strategic process into operational issue that has made the procurement activities to be cumbersome, costly, longer lead time, bullwhip effect and poor quality. More so, integration of external stakeholders into supply chain planning is still at rudimentary stage most especially the local suppliers. It was discovered that the organization is just initiating the process of using procurement tools like tenders, blanket order, Service Level Agreement (SLA), Best Alternative to Negotiated Agreement (BATNA) etc. that hinge on collaborative initiatives and agreements.

From the above findings it can be established that inadequate planning starts and noticeable from each units, departments and sections of the organization. This eventually affects the overall functioning and performance of supply chain as a whole. Also, it is found that external stakeholders are not integrated into supply chain planning of the case company. The possible explanation for this is the differences among the organizations in the value chain in terms of culture, practice and the level of development. This corroborates the view of Bessant and Tidd, (2007) when submitting that for an organization to succeed in the present business environment, manager need to extend leadership beyond their organization, that is ability to manage other partners is a great leverage. It can further be deduced that piece meal planning is the order of the day in supply chain of most organizations in developing or emerging economics as evident in the case company, and this also the view of some of authors most especially authors in developing economies like Somuyiwa (2009).

### **Inventory Management:**

As earlier established Inventory management is an important aspect of supply chain because substantial parts of working capital are in one form of inventory or another. Bowersox et.al., (2010) agree that inventory management require holistic management

attention because of the difficulties associated with management of inventory especially in big manufacturing companies where a lot of inventory has to be kept for continuous running of the system.

In identifying the associated problems of Inventory Management in the organization, it was found out from the case company that the organization faces a big challenge with inventory management this in turn has led to a sizeable wastage. Also identified as associated problems include; putting materials in wrong location, wrong labeling that come with difficulties when such materials are needed. It was therefore recently discovered in the organization that spare part and materials that worth Millions of US dollar was found to be obsolete and no longer useful to the organization. This was as a result of poor clarity that resulted in wrong procurement, inappropriate storage and poor documentation. It was also established that the effect of this poor inventory management is not only felt on resources wastage, it could also encourages pilfering by the custodian of such material when such laxity is discovered.

But in order to reduce the effect of these constraints in the case company the management installed a latest communication technology tool ERP and this has brought in fresh air in the management of inventory. This in turn has brought a little improvement on inventory management. The organization also restructures the supplies directorate by adding inventory management department and it is manned by a substantive manager, unlike what operate before when inventory management is an appendix of store department.

From the above findings it can be deduced that, firstly, inventory has not been accorded its priority place in the organization and this is also in line with submissions of majority of authors in supply chain literature. Secondly the management of the inventory is not done by the professional this is evident in wrong labeling and wrong placement. Lastly, wrong procurement, inappropriate storage and poor documentation can also be identified from the above submissions. It can therefore be deduced that the problems of inventory management in the case company are not different from what is found in the literature.

#### **Cross Functional Team Playing:**

For organization to achieve its overall goal, the individual goal must be adequate integrated into the organization. Therefore, the importance of team playing in the

workplace cannot be underestimated. If an organization is particularly large, it is a good idea to encourage team development through interdependence among the employees.

In investigating team work in supply chain of the case company, it was found out that the team playing across all the partners in the supply chain within the organization can be described to be far below expectation. This may not be unconnected with individuality that exists within the chain. Also, the problem of team work is even more pronounced with the stakeholders outside the four walls of the organization (external stakeholders). The relationship is more of win - loose instead of win-win that team playing hinges upon.

It can therefore be inferred that supply chain partners are not well integrated this in turn may not encourage knowledge sharing and transfer, and most available literature on supply chain support this assertion.

### **Inadequate Training:**

Another constraint in supply chain as identified by literature is inadequate training. Stward (1996) identify training as an essential tool necessary for managing change. This submission from literature corroborates the happenings in the Four Mills Nigeria Plc. In the case company problem associated with supply chain in area of training is that the members of staff are poorly trained. Low investment on training across the organization is also evident in the case company. As a result of their inadequate training, for instance, in raising Purchase Request (PR), the employees in many occasions make mistakes that necessitate rework that result in loss of valuable time. Sometimes people that are in charge of raising request for some important items are not well abreast of development in giving proper description of the items with resultant effect of delay, more cost and poor performance which is against expectation.

It can be inferred from the above submissions that the supply chain of the case company is poorly manned and managed. Also, the employees are poorly trained; this on most occasions has resulted in poor performance. It can therefore be concluded that the situation of training in supply chain in the case company is not different from what the literature has identified. The view of authors like Nonaka et al, (2000) and Emberg, (2010) agree that there should be an enabling environment that can support bringing past experience to the present. With this organization will be able to harvest from the past for

future development. Stward (1996) and Emberg, (2010) are of the opinion that such environment is provided by training. It can therefore be concluded that poorly or inadequately trained employees cannot harvest from the past in developing the future of an organization substantially.

### **External Engagement:**

External engagement is another area the organization is constrain because the organizations focus is more on the internal partners. This is an important area because appropriate engagement will bring good sense of belonging where sharing of both ups and downs of their relationship can be managed and developed. From literature reviewed on supply chain like Frankel (2006); Cox, (2001); Bessant and Tidd, (2007) emphasize that in order for supply chain to attain the highest possible impact to organization, the leadership in the chain must refocus the process to accommodate all the partners in the network.

## **6.2 Impact of Knowledge Management Practice on Supply Chain**

Knowledge management as defined by Mc Dermott (1999) is a systematic approach or effort developed in using information as a further value creation in organizations. Knowledge management has been seen as creation of value through interaction and reflection in past experience among actors in organization. Nonaka et al. (2000); Mcdermot, (1999); Ngai & Chan, (2005) submit that the two aspects of knowledge management are complementary for organizations to benefit optimally from the practice of knowledge management: Information Sharing and Interaction. It has also been established from the literature that the impacts of knowledge management on supply management is felt on procurement, customer/supplier relationship, fulfilment process and information sharing.

One of the positive impacts of Knowledge management in the case company in recent time was the new initiative on strategic sourcing incorporated in procurement of gasoil and this has brought into the organization certain level of sanity in gasoil procurement. In this new initiative the partners in this new agreement agreed to train the employees of the company on the best practice in gasoil receiving procedure and calibration of the equipment. The suppliers of this product also assist the organization with information from archives that assisted in getting data for well informed analysis for proactive

decision making. The companies jointly plan for these initiatives that include removal of all grey areas from the contract before signing. Despite the laudable impacts knowledge management has, evidence abound that the case company has not fully integrated knowledge management into its supply chain.

It can be concluded that the impacts of knowledge management on supply management could be felt on procurement, customer/supplier relationship, fulfillment process and information sharing.

### **6.3 Constraints to implementation of knowledge management**

According to Goldratt and Cox (1992) a constraint is any element or factor that limits the system from achieving what it has designed to accomplish (i.e., achieving its goal). They further stress that the constraints to implementation of knowledge management in supply chain management are indentified in the company to include; Leadership interest, Communication, Joint Planning, Low Trust, Poor Team Playing and Poor Information Sharing.

Evidence from the case company confirms the above assertion that one of the major constraints is Leadership Interest. It was also found out that leadership being the head of an organization, and the body that gives direction that an organization follows in achieving its strategic objective, is of great importance in development of initiatives that encourages Knowledge Management practice. This is more important because of the abstract nature of the knowledge management. The above findings also represent the view of Bessnt and Tidd, (2007) when they both indentify leadership interest as an important component of innovation through managing beyond ones organization

Also, identified in the case company as constraints is low sharing of information most especially with their external stakeholder while even the internal needs to be refocused for better supply chain. But the case company has made little investment in the area of information technology that is an important component of knowledge management, but still some areas within the organization could be said to be grossly inadequate.

Another view to this is that effective technology usage is another source of worry within the case organization and the power of the investment in this line is undermined because all the reports that could be generated by the system are not well understood by majority of the players. Therefore, the systems are not used to its optimal capacity; this is also seen in is the analysis of information generated data from achives.

It can therefore be concluded that the complete model of knowledge management which include; Generating, Creating, Storing, Codification and Usage are still greatly underutilized in the case company and this has great impacted on negatively the supply chain. As Steward (1996) argues that the nature of change in organizations are continuous, unpredictable, uncertain and many time could be sudden, interaction between all the parties in the organization with appropriate engagement will lead the way in surmounting competitiveness challenge associated with change.

#### **6.4 Major Players in the Implementation**

The supply chain management is being described as process of managing the flow of materials and its network(Gokhan and Needy, 2010). The stakeholder in the process include; Leaderships across the partnering organizations; functional teams in the supply chain, competitors e.t.c.

Information collected from the case company shows that for the knowledge management practice in the organization to be enhanced, all the players in the process must understate their value contribution to the whole process, this in line with the major views in supply chain literature. The important stakeholders identified by literature to drive the grooming of the knowledge management include the following and this is similar to that of case company;

- Leadership of the organization in the chain – the organization needs a lot of buy-in approach to other organizations in the chain. This is necessary because only through leadership such process can be driven in corporate organization.
- Participants in the process, all the people in the organization needed to be incorporated with necessary buy-in as the part of the big objective of the company
- Competitors – another important player in the practice of knowledge management are the competitors, this could be important because better approaches to different areas of supply chain can be learnt from the competitors.
- Government – another important stakeholder is government, in order to know the state of development and new trend of events with the government legislations.

To bring all these people together, culture must be recognized and valued, interest of individual organization and group must also be protected.



## CHAPTER SEVEN

### 7.0 Conclusion

Researching into an enhancement of supply chain through knowledge management provides an attempt to understand as well providing a policy that will help in effective utilization of knowledge management in enhancing supply chain. Also, the study shows associated constraints in supply chain such as ineffective communication, uncoordinated planning, inadequate training and leadership interest, low trust across the chain, poor team playing as well as poor information sharing. These constraints do not only affect the implementation of knowledge management in supply chain, they affect the overall performance of entire supply chain. The goals of this final chapter include; firstly, is to return to the purpose of this study and ensure that the research questions are adequately answered. Secondly, to point out the limitations to this research while final objective is to make recommendations as well as contribution to knowledge.

### 7.1 Answers to research questions

As set out in the purpose of this research work, the study is based on the following research questions;

- ❖ What are the constraints militating against the adoption of knowledge management in supply chain?
- ❖ What are the impacts that knowledge management has on supply chain management?
- ❖ Who are the major players in the implementation of knowledge management in managing supply chain?

In answering the first research question, a through review of literature was done, it was identified in the literature that majority of constraints militating against the adoption of knowledge management in supply chain are basically; poor communication which hindered the prospect knowledge sharing and transfer. Also, identified is inadequate planning and improper coordination of the supply chain. This in most cases has led majority of organization to face challenges of urgent ordering of materials and services because other functions do not know the next line of action in the other arms of the organization. Evidence are bound that this deficiency in the system has turned important

strategic process into operational issue that has made the procurement activities to be cumbersome, costly, longer lead time, bullwhip effect and poor quality.

More so, Inventory Management in the organization is another big constraint to adoption of knowledge management in supply chain. It could be said that organizations faced big challenges with inventory management this most time has led to a sizeable wastage. Associated inventory management problems include; putting materials in wrong location, wrong labeling that come with difficulties when such materials are needed. These in so many times had negative impacted on possibility of sharing and transferring of knowledge in supply chain.

Another noticeable constraints is team work in supply chain, it was found out that the team playing across all the partners in the supply chain within organizations can be described to be far below expectation. This may not be unconnected with individuality that exists within the chain. Also, the problem of team work is even more pronounced with the stakeholders outside the four walls of organizations (external stakeholders). The relationship is more of win - loose instead of win-win that team playing hinges upon. It can then be concluded that evident abounds that there is a direct connection between team work, knowledge sharing and knowledge transfer.

Inadequate training was also identified as another major constraint in implementing knowledge management in supply chain. It is apparent that majority of employees in most organizations are poorly trained. It can be inferred from the above submissions that the supply chain of the case company is poorly manned and managed. Also, the employees are poorly trained; this on most occasions has resulted in poor performance. For organizations to be able to harvest from the past for future development there must be an environment that encourages regular training.

The second research question intends to identify the impacts of knowledge management on supply chain, in solving this research question the following was indentified; it was found out that the two aspects of knowledge management are complementary for organizations to benefit optimally from the practice of knowledge management: Information Sharing and Interaction. Also identified is the fact that the impacts of knowledge management on supply management are felt on procurement, customer/supplier relationship, fulfillment process and information sharing. More so, the impacts of knowledge management include better information sharing, joint planning,

increase in trust, better exchange of expertise and sharing with reflection on experiences. The supply chain management is being described as process of managing the flow of materials and its network. The stakeholder in the process include; Leaderships across the partnering organizations; functional teams in the supply chain, competitors e.t.c.

Information collected from the case company shows that for the knowledge management practice in the organization to be enhanced, all the players in the process must understate their value contribution to the whole process.

On these premise efforts should be geared towards;

- (i) Communication: Communication is a potent tool in managing supply chain within organizations, knowledge being residing with individual. It can therefore be said that there is need for properly integration within the chain and communication furnace need to be fired to get better result.
- (ii) Joint planning: Planning roles in supply chain can never be overemphasized. Robust supply Chain is premised on a planning that is not within the wall of organizations alone but with all the partners in the chain. To remove constraints, Knowledge Management requires more integrated planning across all the functions in the organization as that is seriously inefficient as evident in most modern organizations. Therefore, supply chain structure must be restructured to include a holistic planning that reduces gaps between all the partners in the network, this will allow for easy adoption of Knowledge management.
- (iii) Information is strategic asset to both supply chain and knowledge management. Organizations must guide it jealously, before it can flow uninterruptedly. Also, in supply chain there must be serious trust and this in turn will facilitate easy flow of information. Therefore, supply chain partners should go above current level of independence to a more robust level of interdependence. Organizations on the chain must understand their uniqueness of individuality rather than father to son relationships that are common in supply chain network.
- (iv) Emphasis should be towards providing an environment that will facilitate easy integration and sharing of information within the chain, with this value can be easily learnt and transferred.

- (v) Documentation involves the process of generating storing and interpretation of information before it can be regarded as useful for the future. Though organizations generate much information continually but turning this to useful asset is another challenge. To reduce this constraints knowledge sharing through robust documentation for the use of self and other partners is of great importance that safes time resource in supply chain.

The third research question intends to identify the major actors in the implementation of Knowledge Management to managing Supply Chain. As presented previously, supply chain require collaboration of all the actors in the processes involved both those within the organization and those outside it but very important to actualization of its objective. The major characters indentified in implementation of Knowledge management in supply chain are as follows;

- Leadership of the organizations in the chain – For real success the leadership of all the organizations in a supply chain network need a lot of buy-in approach among themselves to arrive at a convenient consensus agreement. Without leadership commitment such consensus decision will be difficult to implement.
- Participants in the process - Since the operations of supply chain usually involve many functions in any organization, incorporating input from all these different functions and people is very vital.
- Competitors – The competing organizations are usually important source of innovativeness in supply chain structure. Seen competitors as part the process gives room for learning new ways of rearranging supply chain for better competitiveness.
- Government – This become the important player because it drives the legal environment which is an important variable for an organization success. Incorporating government and its agency in planning supply chain become critical to its success.

## **7.2 Contribution to Knowledge**

This work contributes to both supply chain and knowledge management literature and it's as well contributes to supply chain improvement process. More so this research work contribute to development of supply chain by transforming relationship toward

mutual respect to all parties in the value chain in managing consistent change in business environment like technology, environment, competition, market demand which require interdependency, information and relationships that can spur better trust to respond in a more practical ways.

Believing that, the perspective developed in this thesis can add fruitful insights to adopting knowledge management in enhancement process of supply chain. Additional studies could be fired in refining the perspective. Even adopting this view will go along way in providing the needed direction in knowledge management that could be used in the enhancement of supply chain.

### **7.3 Limitations**

Further more, this work cannot claim to proffer all the solution to enhancement of supply chain, first; it is a mono case research that limits the capacity to generalize findings. But despite being a mono case the findings in this study is believe to have been generated from a scientific process and if same process is adopted in another case company the same result will be generated. Second, it is tested in just an environment (Nigeria), also limit the capacity to believe that the same thing will be obtainable in other countries of the world. This now lead me in suggesting that the same approach to supply chain management can be tested in different companies, different countries and continent in order to have a more holistic view of how knowledge management practice can be used in development of supply chain that support business in a more strategic way towards enhancing organizations' performance.

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## Appendix I

### Interview Guide

#### Category A:

What are your experiences with procurement process in Flour Mills of Nigeria Plc? Past and present

What are the challenges you are facing with Purchasing Department in meeting your business needs?

What are the implications of those difficulties on your job function?

Is there any area you think you (the originators) make the purchasing process difficult?

What could be the impacts of those challenges on the company as a whole?

How do you think the process could be improved upon?

#### Category B:

What are your experiences with procurement process in Flour Mills of Nigeria Plc? Past and present

What are the challenges you are facing with the Procurement process in discharging your responsibility:

- a) Within the company?
- b) With the suppliers?

How do you think the challenges can be addressed?

Is there any forum where the organization meets with those customers both internal and external ones?

## Appendix II

### The List of Interviewee

- i. Head of Human Resources Department
- ii. Head of Mechanical Engineering Department
- iii. Head of Electrical Engineering Department
- iv. Head of Civil Engineering Department
- v. Head of Workshop Department
- vi. Head of Environmental and Safety Department
- vii. Head of Stores Department
- viii. Head of Marketing Department
- ix. Head of Production Quality Assurance
- x. Representative of the following Subsidiaries – Golden Transport; Golden Sugar; Golden Pasta; Golden Fertilizer; Golden Rice; Apapa Bulk Terminal; Bagco; Flour Mills Register and Southern Star Shipping
- xi. Head of Water Treatment Plant Department
- xii. Head of Conveying System Unit
- xiii. Head of Housing Department
- xiv. Head of Purchasing Department