

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The growth of the manufacturing sector is crucial for economic development because it is a potential engine of modernisation, a creator of skilled jobs, and a generator of positive spill-over effects (Tybout, 2000). Historically, the growth in manufacturing output has been a key element in the successful transformation of most economies that have seen sustained rises in their per capita incomes (Soderborm and Teal, 2002). For instance, Germany and Japan became two of the most affluent countries in the world through the execution of sound manufacturing strategies clearly devised to produce high-quality and high-tech products (Ilori, Adeniyi and Oyewale 2002). Similarly, middle income countries like Hong Kong, South Korea, Singapore, the Philippines, India, Mexico and Brazil have embraced boosting productivity schemes as an integral part of their national planning and today they have made significant-in-roads into the world industrial markets (Anyawu, n.d.).

According to Ilori et al (2002), a manufacturing economy is superior to other types because: (i.) it is a major consumer of raw materials and energy; (ii.) it provides the basis for the transport and distribution industries; (iii.) it produces the products for the wholesale and retail trade; (iv.) it produces machinery for the various sectors of the economy; and (v.) it provides a major market for the finance and service industries. In fact, manufacturing generates wealth to the society by providing jobs and generating a flow of currency among companies and individuals.

The manufacturing industry in Nigeria has not been noted to have contributed very significantly to the nation's economy. Despite the sector's vast potential to better the lots of the nation's development (Akinmulegun and Oluwole, 2013), it has suffered neglect from successive governments, no thanks to overdependence on the petroleum industry since the oil boom years of the 1970's. The manufacturing sector

has not contributed more than 10% to the nation's Gross Domestic Product (GDP) since 1970 till date (NBS, 2014).

Successive administrations in Nigeria have made efforts to revamp the manufacturing industry such as injecting direct funds into the sector through the Central Bank's bail-out funds, formulating and implementing diversification policies to switch focus from crude oil to production activities and liberalising immigration laws to attract foreign direct investments in the sector. However, the sector still experiences low performance characterised by high cost of production, low value-added products, under-utilisation of capacities, high job cuts and low level of employment. Many reasons have been adduced for the low performance of the manufacturing sector in Nigeria ranging from high cost of raw materials, incessant power cuts, poor infrastructure, high cost of foreign exchange, high cost of production and high bank interest regimes. But, the effects of knowledge management capabilities of the industry on its performance have not been given much attention. There are few discussions in literature about how organisations, particularly manufacturing companies in Nigeria leverage on their knowledge assets for improved products and organisational performance. This is the gap that this study has addressed.

Knowledge has been recognised as the new strategic imperative of organisations. Drucker (1994) predicted that the performance capacity, if not survival, of any organisation will depend on the quality and amount of knowledge in the organisation. This projection informed Keursten, Kessels and Kwakman's (2003) view that the application of knowledge adds more value to production activities than the traditional factors of production including capital, raw materials and labour. According to Civi (2000), knowledge represents 75% of a company's worth. This has necessitated the need for knowledge management in organisations.

Knowledge Management (KM), though a recent coinage, has existed in various activities of man for hundreds of years. For instance, Hansen, Nohra and Tierney (1999) observed it in commercial wisdom being passed down from family business owners to their children, and also among workers in exchange of ideas and know-how while on – the –job. However, recent developments in technology and management have presented several opportunities to modern day organisations to formalise KM activities to the effect that different models now exist from which they can choose as it is appropriate to their business goals.

The goal of KM is for an organisation to become aware of its knowledge, individually and collectively, and to shape itself so that it makes the most effective and efficient use of the knowledge it has or can obtain (Bennet and Bennet, 2003). KM aims at making an enterprise act as intelligently as possible in order to secure its viability and overall success and also to realise the best value from its knowledge assets. It also aims to create conditions under which competitive advantage can be maintained, by acquiring, retaining and exploiting the knowledge identified by the organisation.

Knowledge management enables organisations to operate better in a new and challenging environment. It helps them to evolve new structures and management; it mobilises; rewards and develops people in new ways and with new urgency; and assists organisations to face new priorities (Chase, 1997). Becerra-Fernandez (1999) asserts that organisations that implement KM will benefit from fewer mistakes, fewer redundancies, quicker problem-solving, better decision-making, reduced research and development costs, increased worker independence, enhanced customer relations and improved service.

KM in organisations requires managing several processes of knowledge from creation through sharing to application (Singh and Soltani, 2010). The observable organisational activities that are related to these processes are regarded as knowledge management practices. Knowledge creation refers to the ability of an organisation to develop new and useful ideas and solutions (Marakas, 1999). The essence of knowledge creation is to link tacit knowledge residing in people's brain to employees of another generation. Organisations create new knowledge through numerous activities which were highlighted by Morse (2000) such as action learning, systematic problem solving, and learning from past experience.

Knowledge capturing is a knowledge creation process that involves identifying and acquiring business-related information or static knowledge that supports and builds the organisation's asset value. It is a process of making knowledge accessible to the end user through mapping, indexing, and requesting mechanisms. Organisations acquire knowledge from both external and internal sources. According to Keyes (2006), knowledge of value to an organisation can be captured from three main sources. These sources include learning from customers, learning from own organisation and learning from other organisations. Since customers are a major source of knowledge about areas of product and service

improvement, organisations have devised techniques such as customer complaint systems used to derive lessons that can lead to such improvements. Technology of customer relationship management is used here to record important customer interactions and generate data that can help service improvement.

In almost all organisations the chief source of expertise and the wellspring of innovation come from within the organisation itself. Although every organisation produces some of its “organisational capital” in the form of manuals and procedure documents, most of it is actually contained in the minds and behaviours of its employees (Keyes, 2006). In order to release this capital and get value from it, organisations do put in place recognition and reward systems that would motivate employees in whose minds the expertise reside for them to release, record and document the knowledge. Learning from other organisations is about the largest, most complex and most diffuse source of knowledge to an organisation. Organisations usually learn in considerable amount from other comparable organisations which do not necessarily need to be the same type of organisation through knowledge capturing procedures such as exchange programmes, training, workshops, apprenticeship and internships.

Knowledge sharing involves engaging in activities that are geared towards making knowledge more active and relevant for the firm in creating values. In general, knowledge needs to be employed into a company’s products, processes and services. If an organisation does not find it easy to locate the right kind of knowledge in the right form, it may find it difficult to sustain its competitive advantage. Knowledge sharing process involves the mechanical, electronic and interpersonal movement of information and knowledge both intentionally and unintentionally. Organisations intentionally transfer knowledge by written communications, training, internal conferences, internal publications, job rotation and job transfer, and mentoring. Unintentional transfer of knowledge is a function of unplanned human interaction through job rotation, storytelling, task forces and information networks (Park, 2007).

Knowledge needs to be shared throughout the organisation before it can be exploited at the organisational level. The interactions between organisational technologies, techniques, and people can have direct bearing on knowledge sharing. Organisations that have successfully implemented KM have developed techniques that encourage greater levels of knowledge sharing. These are broadly categorised

into five approaches namely: (i.) problem solving, (ii.) organisational learning, (iii.) organisational design, (iv.) cultural and (v.) advanced technique.

A number of techniques have been identified for capturing and sharing knowledge and expertise in organisations that implement KM which include knowledge audits, collaboration, communities of practice, knowledge mapping, mentoring, social network analysis, storytelling, and training and development. Others are apprenticeships, internships, expert interviews, job aids, knowledge fairs, lesson learned debriefings and on-the-job training.

Knowledge application is related to activities concerned with deploying knowledge in order to produce goods and services. Truch (2004) categorised such activities into three. The first is putting knowledge into use. Knowledge can be put into such uses as performing core tasks, making decisions, setting strategy and learning from experiences. Another activity is linking to business process where knowledge creates value; and the third is selling and licensing the knowledge asset.

Literature has identified different frameworks organisations adapt to implement KM initiatives. For instance, Hubert and O'Dell (2004) articulated six of such strategies to include: KM as a business strategy; transfer of knowledge and best practices; customer-focused knowledge; personal responsibility for knowledge; intellectual asset management; and innovation and knowledge creation. Organisations that often view knowledge as their product adopt KM as a business strategy. Such organisations pursue KM seriously because they consider knowledge to have significant positive impact on their productivity and that KM is significant to their ability to compete and grow. Organisations that consider tacit and explicit knowledge sharing as an enabler of effective and efficient operation adopt the framework that emphasise transfer of knowledge and best practices. This focuses on systematic approaches to the reuse of knowledge and transfer of best practices, with the objective of using this knowledge to improve operations, products and services.

Moreover, the customer-focused knowledge strategy focuses on knowledge about customers. It involves activities that emphasise developing and transferring knowledge and understanding of customers' needs, preferences, and in the end, using the knowledge of the organisation to solve problems. Organisations that recognise employees as their most valuable asset operate the framework that focuses on employees' personal responsibility for knowledge. The emphasis of this strategy is that people are the engine of knowledge and they should be responsible for

identifying, maintaining, and expanding their own knowledge and need to be able to use the knowledge to benefit the customers and the company. Whichever framework an organisation adopts to implement its KM initiative is a function of the objectives it sets out to achieve.

According to Bixler (2002), the success of an enterprise-wide KM rests on four pillars. These pillars are leadership, organisation, technology and learning, and they represent the critical success factors for KM implementation. KM practices usually lead to change in organisational culture. Therefore, its successful implementation requires a champion or leader either at or near the top of an organisation who can provide the strong and dedicated leadership needed for the change. Leadership develops business and operational strategies to ensure survival of and to position the organisation for success in today's dynamic environment. Such strategies determine vision, and must align KM with business tactics in order to drive its value throughout the enterprise. In order to properly coordinate KM, some organisations are creating KM department and designating Chief Knowledge Officer (CKO) in order to promote KM and demonstrate its strategic importance (Uriarte, 2008).

Technology enables and provides the entire infrastructure and tools to support KM within an enterprise. While cultural and organisational changes are vital to achieving a KM strategy, a lack of proper tools and technology infrastructure can lead to failure. Nevertheless, any technical solution must add value to the process and achieve measurable improvements. Properly assessing and defining information technology (IT) capabilities is essential, as is identifying and deploying best-of-breed KM software and IT tools to match and align with the organisation's requirements. In any KM system, three principal technology infrastructures are needed (Uriarte, 2008). These are: technology for content management; technology for information search; and technology for locating appropriate expertise. Bixler (2002) highlights ten functional requirements that enterprises can select and use to build KM solutions. These are: capture and store; search and retrieve; send critical information to individuals or groups; and structure and navigate functions. Others are: share and collaborate; synthesise; profile and personalise; solve or recommend; integrate with business applications; and maintenance functions.

But, the best tools and processes alone will not achieve a KM solution. Ultimately, people are responsible for using the tools and performing the operations.

People and culture are crucial to successful and effective KM implementation. Appropriate organisational structure, corresponding human resources practices and consistent organisational culture are important elements of a KM project in an organisation. Moreover, effective KM requires that people be specifically assigned to every stage of the process – including collecting, organising, adding value, disseminating and supporting its use (O’Dell, Elliot and Hubert, 2004). Consequently, successful implementation of KM requires an organisational structure that assigns responsibilities throughout the organisation in line with its goals and strategies. Such structure should be formidable enough to make knowledge sharing possible and easy for all employees. One way to provide a solid organisational structure for a successful KM implementation is by creating a KM department with a strong leadership and sponsorship at the executive level. This is necessary in order to ensure substantial funding and organisational change.

Learning is an integral part of knowledge management. In this context, learning can be described as the acquisition of knowledge or a skill through study, experience or instruction. Enterprises must recognise that people operate and communicate through learning that includes the social processes of collaborating, sharing knowledge and building on each other’s ideas. Managers must recognise that knowledge resides in people, and knowledge creation occurs in the process of social interaction and learning. Organisational learning must therefore, be addressed with approaches such as increasing internal communications, promoting cross-functional teams and creating a learning community.

The underpinning of this study is that when an organisation engages in KM practices, it achieves better in its organisational performance. In other words, if an organisation builds capacity to support and facilitate knowledge creation, sharing, storage, transfer and utilisation, its members will have access to more useful and applicable information that will facilitate better and faster decision making, reduce cost of production, engender better customer services, improve market share and gain competitive advantage. Results from both qualitative (e.g. Davenport and Prusak, 1998; Nonaka, 1994) and quantitative (e.g. Choi and Lee, 2003; Darroch and McNaughton, 2003; Tanriverdi, 2005) studies indicate that KM practices are positively associated with organisational performance. This positive association is identified in gaining competitive advantage and higher innovation.

Organisational performance constitutes all behaviours related to organisational objectives depending on the level of contributions of individuals to the organisation (Bormen and Motowidlo, 1993). It is also described as the mirror that reflects an organisation's ability in achieving high productivity, good market share, profitable financial reward and commendable social responsibilities towards the environment where it works (Tubigi and Al Shawi, 2015). Measurements of organisational performance have been noted to vary from organisations to organisations depending on nature of business activities, focus of business and business goals (Giovanni, 2012). Organisational performance can be measured by using a set of objective performance indicators such as profit per employee, return on sales (ROS) and productivity per employee which are based on Huselid (1995). It can also be measured subjectively by using Delaney and Huselid's (1996) scale of respondents' perceptions of their firm's performance relative to that of similar organisations; and the respondents' perceptions of their firm's performance relative to product market competitors.

Objective indicators such as return on investments used by Zack, McKeen and Singh (2009) and return on assets used by Choi and Lee (2000) have failed to establish a direct relationship between knowledge management on organisational performance. However, non-financial indicators such as product leadership, customer intimacy and operational excellence (Zack, McKeen, and Singh, 2009) have been found to have positive association with implementation of knowledge management in organisations. Product leadership represents competition based primarily on product or service innovation, customer intimacy represents competition based on understanding, satisfying and retaining customers, while operational excellence represents competition based on efficient internal operations as perceived by the respondents. Therefore, organisational performance is measured by the subjective approach using managers' perceptions of their company's performance relative to product competitors over a period.

The manufacturing sector is strategic to the economic development of a nation; therefore, it requires business optimisation strategies like KM to boost its performance. KM research has produced a significant body of knowledge in terms of practice and theory (Brooking, 1996; Davenport and Prusak, 1998; Stewart, 2002) but a few is related to the manufacturing industry. Like every other sector, the manufacturing industry needs access to the best internal and/or external information

and knowledge for effective decision-making and ability to innovate and adapt new techniques to improve products and services; an opportunity which KM has the potential to provide. It is not apparent that the manufacturing industry in Nigeria implements KM strategies to improve its performance. Therefore, the need to investigate KM practices in the sector and how these practices have impacted on its organisational performance.

1.2 Statement of the Problem

KM literature has reported efforts of for-profit organisations in USA, Europe and Asia towards formally and explicitly institutionalising KM practices to improve productivity, innovation and competitive advantage. The organisations integrate specific KM approaches with their business goals and strategies with the aim of leveraging knowledge effectively to enhance organisational performance. They modify their organisational structures to suit the demands of KM and adopt solutions tailored towards KM practices; thus authenticating the fact that KM was an imperative to tackle the challenges of their business environments.

Despite the benefits of knowledge management to organisational performance, there were indications that the manufacturing industry in Nigeria was yet to institutionalise knowledge management practices in its operations. It has been noted that the sector has not been making the expected impact on the Nation's development regardless of several fiscal and political interventions of successive administrations. Its contributions to the country's GDP remain less than 10% since 1970; and many of the manufacturing companies listed on the Nigerian Stock Exchange are folding up. The poor performance of the sector is attributable to the failure to institutionalise KM in the industries.

Previous studies in Library and Information Science field, such as Ayatse (2012) and Olatokun (2007) have investigated the impact of Information and Communications Technologies (ICTs) on the performance of the manufacturing industry in Nigeria. Others have also studied the influence of factors like business environment and information management on the sector in Nigeria but there is a dearth of studies about how organisations generally, and the manufacturing industry in particular, intentionally leverage on their knowledge assets for the purpose of improving their performance. In order to fill this gap in knowledge, this study

investigated the status of knowledge management practices and its relationship with organisational performance in the manufacturing industry in Nigeria.

1.3 Objectives of the Study

The main objective of this study is to investigate the relationship between knowledge management practices and organisational performance in the manufacturing industry in Nigeria. The specific objectives are to:

- i. find out what the manufacturing industry considers as priorities in its operations to gain an edge over competitors;
- ii. determine the importance attached to knowledge in the manufacturing industry in Nigeria;
- iii. find out the types of knowledge that are critical in the manufacturing industry in Nigeria;
- iv. investigate the status of knowledge management in the manufacturing industry in Nigeria;
- v. investigate the knowledge creation practices in the manufacturing industry in Nigeria;
- vi. find out the knowledge sharing practices in the manufacturing industry in Nigeria;
- vii. ascertain the reasons for knowledge management practices in the manufacturing industry in Nigeria;
- viii. determine the extent to which the organisational structure support knowledge management practices in the manufacturing industry in Nigeria;
- ix. find out the extent to which the technologies used support knowledge management practices in the manufacturing industry in Nigeria;
- x. ascertain the organisational performance in the manufacturing industry in Nigeria; and
- xi. determine the relationship between knowledge management practices and the organisational performance in the manufacturing industry in Nigeria;

1.4 Research Questions

In order to achieve the objectives of the study, the following research questions were answered.

1. What does the manufacturing industry consider as priorities in its operations to gain edge over competitors?
2. How important is knowledge to success in the manufacturing industry in Nigeria?
3. What types of knowledge are critical in the manufacturing industry in Nigeria?
4. What is the status of knowledge management in the manufacturing industry in Nigeria?
5. What are the knowledge creation practices in the manufacturing industry in Nigeria?
6. What are the knowledge sharing practices in the manufacturing industry in Nigeria?
7. What are the reasons for implementing knowledge management practices in the manufacturing industry in Nigeria?
8. To what extent do the organisational structure support knowledge management practices in the manufacturing industry in Nigeria?
9. To what extent do the technologies used support knowledge management practices in the manufacturing industry in Nigeria?
10. How well is the organisational performance in the manufacturing industry in Nigeria?

1.5 Hypotheses

The following null hypotheses were tested in the study at 0.05 level of significance:

H₀₁: There is no significant relationship between knowledge management practices and organisational performance of the manufacturing industry in Nigeria.

H₀₂: Knowledge creation practices will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

H₀₃: Knowledge sharing practices will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

H₀₄: Organisational structure will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

H₀₅: Technologies used will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

H₀₆: Knowledge creation practices, knowledge sharing practices, organisational structure and technologies used will not jointly and significantly influence organisational performance in the manufacturing industry in Nigeria.

1.6 Scope of the Study

The study covers the manufacturing companies listed in the Nigerian Stock Exchange (NSE). Although there are 84 manufacturing companies in the NSE, only the 60 that were functional and located in the southwestern states of Lagos, Ogun and Oyo were studied. NSE listed companies were used for the study because they included the large scale organisations that are expected to implement cutting-edge strategies aimed at improving organisational performance. Likewise, the research was limited to South-west of Nigeria because many of the manufacturing plants are located in the region, particular in Lagos, which is the commercial nerve centre of the country.

The data used were collected from top management personnel or their representatives in the manufacturing companies. Data relating to knowledge management practices were limited to how the managers view their companies to be engaging in knowledge creation and sharing activities; and the extent to which they feel their companies' organisational structure and technology infrastructure supported the activities. Similarly, data about organisational performance was based on how the managers perceived their companies' performance relative to that of similar firms and product market competitors within a space of five years (2010-2014).

1.7 Significance of the Study

The findings of this study are expected to reinforce existing literature in KM, Library and Information Science (LIS) fields. The LIS literature is inundated with studies about the subjects of Information and Communications Technologies (ICTs), information management, records management, organisational effectiveness, organisational performance and organisational success in the manufacturing industry

in Nigeria. However, knowledge management was scarcely given attention. The findings of the study are expected to attract the attention of Nigerian LIS scholars to the subject in order to exhaustively examine how organisations can benefit from its practices and rewards. The findings could also alert the corporate community in Nigeria to the imperative of KM as a source of competition, value creation and as an indispensable ingredient for the development of dynamic core competencies in organisations, particularly those with global ambitions. Organisations in Nigeria and other climes that have access to the findings might be enlightened about the potentials of KM and be encouraged to engage in its deliberate practices and institutionalising it in their operational strategies.

Furthermore, the findings are also expected to trigger entrepreneurship ideas in Library and Information Science (LIS) professionals. Knowledge management process lifecycle is similar to the information management procedures which the LIS professionals are trained to coordinate and oversee in various information systems. Most corporate organisations have been observed to lack skilled personnel to handle their information systems let alone the knowledge management processes. In most cases, information management is often lumped with ICT responsibilities. A report of the findings of this study could be an eye opener to LIS professionals to this area of need in corporate organisations and motivate them to harness their skills to exploit the opportunities created by KM and render knowledge management related services to the organisations. The result of this is that new jobs would be created, thus reducing the problem of unemployment that was rampant in Nigeria.

The findings of the study are also expected to address the perennial problem of poor performance of the manufacturing industry in Nigeria by stressing the significance of knowledge management as a business imperative of the 21st Century. It is expected to sensitise the operators of the sector to the importance of organisational knowledge as a factor of production that is more crucial than money, labour and space; and how its deliberate management could improve performance. It would assist them to consider and adopt strategies for capturing and sharing the tacit knowledge residing in the minds and skills of their employees that often leaves with them whenever they retire, disengage or laid-off.

1.8 Operational Definition of Terms

The following terms have been defined in the study:

Knowledge: ideas, innovations, expertise, skills, lessons learnt and others created, generated, acquired, owned, shared and used by individuals, units and departments in manufacturing companies.

Knowledge Management: This is the process of creating knowledge and sharing it in an organisation.

Knowledge Management practices: These are activities, strategies, procedures, techniques and methods, organisational structure and technologies that are involved to coordinate, support and control knowledge processes in the manufacturing industry in Nigeria.

Manufacturing Industry: This refers to the sector of the Nigerian economy that is involved in production of consumable and non-consumable goods.

Organisational Performance: This refers to how the managers in the manufacturing industry perceive the ability of their organisations to achieve high productivity, good market share, profitable financial refund, customer satisfaction, reduced cost of production, efficiency and high return on investment relative to similar organisations and competitors.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of related literature on the concepts and constructs investigated in the research. The purpose of this review is to identify and summarise previous studies that explored KM, with the hope of learning lessons that could be applied to the present research. The review provides the necessary insight for the conceptual model used for the study.

- 2.2 Knowledge Management (KM)
- 2.3 Knowledge Management Processes
- 2.4 Enablers of Knowledge Management
- 2.5 Knowledge Management Practices in Organisations
- 2.6 Knowledge Management Practices and Manufacturing
- 2.7 Knowledge Management Practices and Organisational Performance
- 2.8 Theoretical Framework
- 2.9 Conceptual Model
- 2.10 Appraisal of the Literature Reviewed

2.2 Knowledge Management (KM)

The search for a definition of the term knowledge can be traced to Aristotle's distinction between "know what" and "know how". Today, the knowledge movement is broad and highly diverse in terms of research interest, underlying disciplines, research methods, results and philosophical underpinnings (Foss, 2007). Furthermore, there appears to be a lack of a universal classification relating to knowledge, leading to significant debates and controversies (Tywoniak, 2007) and resulting in research gaps (Foss, 2007).

Terms like knowledge, intellectual capital, absorptive capacity, core competence and core capabilities are not clearly defined and are often used

interchangeably in the literature (Crossan, Lane and White, 1999; Moon and Kym, 2006). The following discussions provide an overview of the various definitions and types of knowledge existing in the literature today.

The number of definitions of knowledge in the extant literature is manifold. An example of such definitions is the one proposed by Dixon (2000) and Von Krogh, Roos and Slocum (1996). They assert that knowledge represents the meaningful links people made in their minds between information and how it is used in a specific context. In their own view, Brauner and Becker (2006) understood knowledge as the result of what has been experienced through perception or generated through thinking and reasoning and which has been stored in memory. Tywoniak (2007) opines that knowledge reduces uncertainty by creating connections between information and context and gains justification through successful action, i.e. it is not enough to know what to do, but to know how to use knowledge to generate results.

To properly understand how organisations manage their knowledge assets, it is imperative to understand the relationship among data, information and knowledge. This is necessary because arguments abound in literature proposing diverse views about the concepts and the relationship among them. Such views often lead to misunderstanding that culminates into problems in information system design (Tuomi, 1999). For instance, Davenport and Prusak (1998) observed that confusion about what data, information, and knowledge are – how they differ, what these words mean - has resulted in enormous expenditure on technology initiatives that rarely deliver what the firms spend the money needed or thought they were getting. These problems, as asserted by Tuomi (1999) originate from insufficient understanding of the existing differences among data, information and knowledge. Likewise, Sveiby (1997) opines that some of the present confusion concerning how to do business in the knowledge era would probably be eliminated if we had a better understanding of the ways in which information and knowledge are both similar and different. He maintains that the widespread but largely unconscious assumption that information is equal to knowledge and that the relationship between a computer and information is equivalent to the relationship between a human brain and human knowledge can lead to dangerous and costly mistakes.

Most of the confusion about the relationship between data and information originates from their definitions because there is no consensus within the literature on the agreed definitions of the concepts (Makori, 2009). For example, some authors

understand data to be symbols which have not yet been interpreted, information as data with meaning and knowledge as what enables people to assign meaning and thereby generate information (Tuomi, 1999). Similarly, other authors consider data as simple observations of states of the world, information as data endowed with relevance and purpose, and knowledge as valuable information (Davenport, 1997).

Faucher, Everett and Lawson (2008) provide a compilation of alternative ways of defining data, information and knowledge as shown in Appendix III. While the information in the table demonstrates that there was no consensus definition of knowledge, data, and information within the literature of KM, it also shows interesting similarities among the submissions of some of the authors. Majority of the authors defined knowledge while a few defined information and data. One area of agreement of the authors is that there is a hierarchy among the concepts of data, information and knowledge. This attempts to maintain the common idea that data is something less than information and information is less than knowledge. This suggests that we first need to have data before information can be created and only when we have information can knowledge emerge.

Tuomi (1999), while representing this conventional hierarchy relationship among the concepts adds intelligence and wisdom as two further types of knowledge. He explains this stand-point by assuming data to be simple isolated facts that when put into context and combined within a structure, leads to information. He further muses that when information is given meaning by interpreting it, information becomes knowledge. He maintains that as human mind uses this knowledge to choose between alternatives, it becomes intelligence, which later develops into wisdom when values and commitment guide intelligence. Thus, the value of the various forms of data-information-knowledge increases through learning.

Many authors share this view, although the details differ. For instance, Davenport and Prusak (1998) state that data is a set of discrete, objective facts about events; data describe only part of what happened; it provides no judgment or interpretation and no sustainable basis of action. Data says nothing about its own importance or relevance. They maintained that data turns into information as soon as it is given meaning. Information must inform data must make the difference. Unlike data, information has meaning. Data becomes information when its creator adds meaning.

Although, there seems to be a broad consensus about the idea that knowledge is more than information, there are different views on their exact relation. One of the more detailed descriptions of the conceptual hierarchy of knowledge has been given by Earl (1994) who differs from most extant hierarchies. Earl asserts that the distinguishing character of knowledge is its social acceptance – which reflects the idea that knowledge has to be inter personal or objective. According to him, there are actually four levels of knowledge needed in order to understand organisational information, with each level representing an increasing amount of structure, certainty and validation. Earl described the four levels of knowledge by saying that organisational events are represented, collected and processed to generate data. Data are further manipulated, presented and interpreted to generate information. Information leads to knowledge, as it is tested, validated and codified. He emphasises that knowledge emerges through interpersonal validation, an idea that is still based on viewing data as the raw material from which knowledge is created.

Tuomi (1999), arguing on the basis that data is more important than knowledge, suggests that the hierarchy be reversed. She points out that knowledge had to come first in order to create data. She maintains that data emerges as a result of adding value to information, which in turn is knowledge that has been structured and verbalised. Tuomi further asserts that there is nothing like raw data, since every measurable or collectable piece of fact has already been affected by the very knowledge process that made it measurable and collectable in the first place.

However, Stenmark (2001) commenting on the conventional and reversed hierarchy views of knowledge agrees with neither. He argues instead, that data, information and knowledge are interwoven and interrelated in more complicated ways than any of the two models. He explains that both data and information require knowledge in order to be interpretable, but at the same time, data and information are useful tools for constructing new knowledge. Old knowledge is used to reflect upon data and information, and when the data or information has been made sense of, a new state of knowledge is formed in the mind of the interpreter, Stenmark submits. Therefore, it seems sensible that a general hierarchy of data, information and knowledge should permit transition in both directions as supported by Williams (2006).

According to Song (2007) data, information and knowledge are interrelated dynamically and interactively. As a result, different people may develop different

relations of the information and data. What is information and data in a certain circumstance could be knowledge in another. Therefore, it is often difficult to distinguish the three, because in a broad sense they are all objects of KM. In this light, this study does not make any sharp distinction among data, information and knowledge but treats knowledge holistically as a construct relating to explicit and tacit knowledge in manufacturing companies.

An understanding of knowledge taxonomies is important for research and practice in knowledge management (Alavi and Leidner, 2001). The distinction among the different types of knowledge influences the theoretical developments in the knowledge management area. The various perspectives on knowledge suggest different approaches to managing it for KM research and practices.

Numerous definitions, perspectives and taxonomies of knowledge in the KM literature reveal various dimensions and characteristics of knowledge, and display the complexity and multifaceted nature of knowledge (Nonaka and Takeuchi, 1995; Davenport and Prusak, 1998; Alavi and Leidner, 2001; Song, Deng and Martin 2004). There is no broad categorical agreement, but there is a kind of consensus that accommodates the co-existence of different definitions of knowledge. This has implications for KM researchers and practitioners both in terms of a general understanding of KM and making full use of its potential that is so critical to organisations in today's dynamic environment.

The meaning of the word "knowledge" is subject to a number of different interpretations. It has been linked with terms such as data, information, intelligence, skill, experience, expertise, ideas, intuition, or insight which all depends on the context in which the words are used (Gao, Meng and Clarke, 2008). As viewed by Plato, knowledge is justified true belief. This view was later modified by Nonaka and Takeuchi (1995) to a dynamic process of justifying personal belief toward the truth at the organisational level.

Bell (1973) in Gao et al (2008) defines knowledge in a broader sense as a set of organised statements of facts or ideas, presenting a reasoned judgment or an experiential result, which is transmitted to others through some communication medium in some systematic term or in general meaning as that which is objectively known, an intellectual property, attached to a name or a group of names and certified by copyright or some other form of social recognition. For Davenport and Prusak (1998), knowledge is a fluid mix of framed experiences, values, contextual

information and expert insight. Boisot (1998) defines knowledge as a capacity that builds on information extracted from data or the set of expectations that an observer hold with respect to an event.

In Drucker's opinion, knowledge is information that changes something and somebody either by becoming grounds for action or by making an individual or an institution capable of being different and more effective, or more simply put, specialised knowledge (Drucker, 1993). Drucker's definition focuses on the utility of knowledge, i.e. application to businesses, in sharp contrast to traditional intellectuals who prided themselves on not considering utility (Gao et al, 2008).

Knowledge can be further viewed as subjective or objective (Becerra – Fernandez, Gonzalez and Sabherwal 2004). According to the objective view, reality is independent of human perceptions and can be structured in terms of assumed categories and concepts. The subjective view, on the other hand, believes reality is socially constructed through interactions with individuals (Schultze, 1999). The objective view of knowledge perceives knowledge as a condition of having access to information, as an object or capability. Viewing knowledge as an 'object' or 'entity' implies that it can be captured, stored, manipulated and transferred (Zack, 1999; Alavi and Leidner, 2001). A condition of having access to information is just an extension of the view of knowledge as an object, with a special emphasis on the accessibility of the knowledge objects (Alavi and Leidner, 2001). Viewing knowledge as a capability places the emphasis on the application of knowledge to influence action (Song, 2007).

The subjective perspective of knowledge views knowledge as both process and a state of mind. The process views of knowledge emphasise the process of knowing and the flow of knowledge that is continually emerging through practice. Knowledge as a state of mind focuses on personal beliefs of individuals (Carlsson, El Sawy et al, 1996; Sveiby, 1997; Song, Deng and Martin 2004). Song (2007) highlights the distinguishing characteristics of the objective and subjective views of knowledge. Presenting his arguments, Song considers objective knowledge as object or thing or commodity or entity; independent of human perceptions; and impersonal in nature. The subjective view, on the other hand, perceives knowledge as a process flow or practice; dependent of human perceptions; and personal or social.

One area of potential controversy regarding the definitions and nature of the various knowledge related constructs was the distinction between tacit and explicit

aspects (Faucher et al 2008). Polanyi (1966) in Gao et al (2008) was the first to divide human knowledge into explicit and tacit. This widely held categorisation of knowledge was made popular by Nonaka, Toyama, and Konno (2001) in the KM literature.

Explicit knowledge can be expressed in formal and systemic language, and can be shared by codifying it through many sorts of data, which can be stored (Faucher et al 2008). Tacit knowledge is less easy to handle, because it is highly personal and subjective; it resides in individuals' mind and is transparent (Selamat and Choudrie, 2004). According to Nonaka et al (2001) tacit knowledge is rooted in actions, procedures, routines, commitments, ideals, values and emotions.

The explicit-tacit dichotomy can fall within the views of subjective and objective knowledge (Song, 2007). Explicit knowledge is regarded as objective because it is independent of individuals and able to be codified into a tangible form. Tacit knowledge on the other hand, is regarded as subjective because it is dependent on individuals and difficult to articulate.

Understanding the form of knowledge and knowledge creation implies recognising this dualistic view of knowledge. This perspective has been commonly distorted to hold that data and information are explicit and knowledge and wisdom are tacit (e.g. Heskett, 2002; Zeleny, 2006). It is also important to note that all tacit knowledge cannot be made explicit (Tsoukas, 2003). As suggested by Polanyi (1966) cited in Faucher et al (2008), formalising all knowledge to the exclusion of any tacit knowing is self-defeating. Indeed, tacit knowledge is necessary to solve problems. As suggested by Plato, if all knowledge is explicit, then neither a problem can be known nor can its solution be looked for as it would be impossible to know that that problem exists. This is why Polanyi (1966) opines that "things that cannot be told can still be known." Therefore, knowledge management has to find a way to cope with tacit knowledge.

According to Uriarte (2008), the very first hurdle to most organisations in managing tacit knowledge is how to identify the tacit knowledge that is useful to the organisation. Once relevant tacit knowledge is identified, it becomes extremely valuable to the organisation processing it because it is a unique asset that is difficult for other organisations to replicate. This very characteristic of being unique and hard to replicate is what makes tacit knowledge a basis of the organisation's competitive advantage (Nonaka and Takeuchi, 1995; Choo, 1998).

Hlupic, Pouloudi and Rzevski (2002), citing Marshall and Brady, mention that given the complexity of knowledge, the depiction of types of knowledge, such as tacit and explicit, as mutually exclusive categories might be misleading and prevent researchers to see the interrelated dimensions involved in the process of knowing. Hence, it is valid to stay with Uriarte's (2008) assertion that explicit knowledge is not completely separate from tacit knowledge. On the other hand the two are mutually complimentary. Without tacit knowledge, it will be difficult if not impossible to understand explicit knowledge.

In organisational context, knowledge can be considered at two levels: the individual level and the organisational level (Gao et al 2008). Personal knowledge refers to Drucker's specialised knowledge and Polanyi's tacit knowledge as well as the person's values – professional ethics and morals (Gao et al 2008). Personal knowledge belongs to the person who processes it rather than the organisation he/she works for, but it can be used by the organisation. At the organisational level, organisational knowledge is divided into organisational static substance knowledge and organisational dynamic process knowledge (Gao et al 2008). Static substance knowledge refers to explicit knowledge or bodies of knowledge in terms of mission and vision, science, technology, management theory, as well as the information and data upon which knowledge is based or from which it is drawn out. It can be classified into visionary knowledge (organisational vision, mission, ethics and morals), objective and/or subjective knowledge (science, technology, and management) in the form of hard aspect like technological equipment and products or soft aspects like research laboratories, qualified employees, patents, copyrights, service, and way of practicing management; and generic knowledge (information and data).

Organisational dynamic process knowledge relates to human actions or the activities of organisational operation, called the organisational human activity system. These are categorised into autonomous human activity system (activity or distinct mission), semi – autonomous human activity system (activity of clear goals), and general human activity system (activity of defined problems). Clearly, each organisation has its unique static substance knowledge and dynamic process knowledge. Seeing them as a whole gives us an architecture of organisational knowledge that can be addressed with different perspectives through shifting social

paradigms, based on different hypothesis and the characteristics of different kinds of knowledge.

Nonaka (1996) postulates that personal knowledge can become organisational knowledge through dynamic interaction between tacit and explicit knowledge. This interaction brings about what he describes as the four modes of knowledge conversion which is based on a double spiral movement between tacit and explicit knowledge. The four modes of knowledge conversion include: Socialisation (from individual tacit knowledge to group tacit knowledge), Externalisation (from tacit knowledge to explicit knowledge), Combination (from separate explicit knowledge to systematic explicit knowledge), and Internalisation (from explicit knowledge to tacit knowledge).

Uriarte (2008) identifies two kinds of knowledge namely core knowledge and enabling knowledge at the organisational level. Core knowledge is the kind of knowledge that is critical to the attainments of the organisation's goal and the fulfilment of its strategy. Because of its critical nature, the management of core knowledge must be kept within the organisation. It must be developed and nurtured in the organisation. Enabling knowledge complements core knowledge of an organisation in order to fully support the realisation of its objectives. When enabling knowledge is combined with the core knowledge, it leads to the development of new products, processes and services.

Although, organisations contain vast reservoirs of untapped core knowledge and enabling expertise, it is unfortunate to note that very few are able to harness this asset in a meaningful way (Uriarte, 2008). This can be attributed to the fact that only a few top executives are aware of where core and enabling knowledge reside and also because they lack how to leverage this knowledge to flow through the organisation. This research investigates the competency of the management in the Nigerian manufacturing industry to identify, harness and leverage their knowledge assets to improve performance and gain competitive advantage.

While knowledge may be difficult to classify and understand, it undeniably has a critical impact on business outcomes (Soo, Devinney, Midgley and Deering, 2002). There are a number of reasons for managing knowledge in organisations. According to Zack, 2003, knowledge is considered as the most important resource for gaining competitive advantage. Knowledge management is believed to be a strategic activity which ensures that organisations have the knowledge to manage the things

which they are responsible for in a rapidly changing environment (Alvesson and Karreman, 2001). Some organisations also manage knowledge because they believe that knowledge flow and networks within organisations and between different organisations are the key elements in successful innovation processes (Manley and McFallan, 2002).

According to Drucker (1994), some other organisations implement KM because they believe that its effective adoption has a positive influence on organisational performance; and Liebowitz (2005) in his paper, conceptualizing and implementing knowledge management assert that organisations engage KM because they believed that KM has the propensity to diminish the loss of knowledge associated with a rapidly ageing workforce and other human resources related concerns such as attracting and retaining younger workers.

Although specific reasons may vary from one organisation to another, a general consensus was that KM can contribute to all sorts of organisational improvements, as well as address an array of intra-organisational problems.

2.2.1 Definitions of Knowledge Management

According to Alegbeleye (2010), knowledge management (KM) has no consensus definition. There are as many definitions as there are authors and practitioners in the field and each defines or describes the concept based on context and perspectives under consideration. Due to the relative infancy of the KM field, various definitions and frameworks exist which has resulted in a less fragmented view of this domain (He, Lee & Hsu 2003). As asserted by Kakabadse, Kakabadse and Kouzmin (2003), a host of working definitions of KM is circulating in the literature and around companies worldwide.

Some researchers opine that the complexity behind defining KM is partially attributed to the challenges in identifying knowledge itself as discussed in an earlier section of this chapter (Choo, 1998; Cortada and Woods, 1999; Mc Adams and McCreedy 1999; Metaxiotis, Ergazakis and Psarras 2005). With many different views of knowledge and the cross-fertilisation of many different fields that contribute to the emerging field of KM, it is necessary to review literature to uncover the main agreements to what is knowledge management.

Wiig (1997) proposes that KM is the systematic and explicit management of knowledge-related activities, practices, programmes and policies within the

enterprise. Sveiby (1997) also points out that KM is the art of creating value to organisations by leveraging intangible assets. Hibbard (1997) defines KM as the process of capturing a company's collective expertise wherever it resides - in databases, on paper, or in people's heads – and distributing it to wherever it can help produce the biggest payoff. Similarly, Van der Spek and Spijkervet (1997) describe KM as the explicit control of management knowledge within an organisation aimed at achieving the company's objectives. This is in-line with Macintosh's (1998) definition that considers KM to involve the identification and analysis of available and required knowledge, and the subsequent planning and control of actions to develop knowledge assets so as to fulfill organisational objectives.

In their own view, O'Dell and Grayson (1998) said that KM applies systematic approaches to find, understand, and use knowledge to create value. Malhotra (1998) also defines KM as the process catering to “critical issues of organisational adaptation, survival and competence to face increasingly discontinuous environmental change. Essentially, it embodies organisational processes that seek for a synergistic combination of data and information processing capacity of information technologies and the innovative capacity of human beings.

A widely-accepted view on KM is that proposed by Davenport and Prusak (2000) who defined it as a process largely concerned with the exploitation and development of the knowledge assets of an organisation with the view of furthering the organisation's objectives. They explained that the knowledge assets are not limited to explicit, documented knowledge but also include the tacit, subjective knowledge of the organisation. This stems from Drucker's (1995) assertion that the collective knowledge residing in the minds of its employees, customers, suppliers, etc is the most vital resource for an organisation's growth.

According to Wiig (1999), KM is broad, multi-dimensional and covers most aspects of the enterprise activities. This explains why some authors focus their definitions on the KM objectives. For examples, Wiig (1999) states that “the objectives of KM are: to make the enterprise act as intelligently as possible to secure its viability and overall success and realise the best value of its knowledge assets.” In sum, KM is the deliberate and systematic coordination of an organisation's people, processes, technology, and organisational structure in order to add value through reuse and innovation (Dalkir, 2005).

This review reveals that there is a general agreement on what KM is all about. A consistent theme in all espoused definitions is that KM provides a framework that effectively builds on past experiences of the organisation and provides an avenue for new mechanisms for knowledge transfer and creation to emerge. Researchers and practitioners alike agree that KM effectively creates, captures, shares and uses organisation-wide knowledge to improve the organisation's performance and to gain competitive advantage. This all encompassing working definitions of KM shall be adopted for this study.

2.2.2 History of Knowledge Management

KM is a relatively new discipline and therefore has a short history (Uriarte, 2008). It owes its early development to the work of theorists and practitioners (Woods, 2004). Among these early works are the papers published by Peter Drucker, Paul Strassman, and Peter Senge. In their papers, Peter Drucker and Paul Strassman observed the growing importance of information and explicit knowledge as valuable assets of organisations. Peter Senge's work on the other hand, focused on the "learning organisation" and emphasised the cultural dimension of managing knowledge. Other management experts and practitioners like Chris Aygyris, Christopher Bartlett and Dorothy Leonard-Barton of Havard Business School contributed significantly to the development of the theory of KM and the growth of its practice by examining in their various works and publications the many facets of managing knowledge.

In 1995, Leonard-Barton published a book titled "Wellsprings of knowledge – Building and sustaining sources of innovation" which documented her case study of Chaparral Steel, a company which had an effective knowledge management strategy in place since mid-1970s. Also contributing to the current understanding of how knowledge is produced, used and diffused within organisations are the pioneering studies made in the late 1970s by Everett Rogers at Stanford on the diffusion of innovation and by Thomas Allen at Massachusset Institute of Technology (MIT) on information and technology transfer.

The growing recognition of the importance of organisational knowledge led to an increasing concern over how to deal with exponential increases in the amount of available knowledge and the complexity of products and processes. It was at this point that the computer technology, which in the first place contributed heavily to the great

abundance of information, started to become part of the solution in a variety of ways. Two examples of technology solutions that were available for use in early knowledge management systems can be cited. One of such solution was Augment (short for augmenting human intelligence), introduced in 1978 by Don Engelbert, and other early hypertext/ groupware application systems. Another notable example was the KM systems developed by Rob Acksyn and Don McCracken, which was an open distributed hypermedia tool that predated the World Wide Web (WWW) by a decade.

By the mid-1980s the importance of knowledge as a competitive asset was already well-recognised, even though classical economic theory does not fully recognise the value of knowledge as an organisational asset. It was during this period that Peter Drucker coined the term “knowledge worker” (Drucker, 1994). He, together with other writers like Matsuda and Sveiby, wrote in-depth about the role of knowledge in organisation. Thus by late 1980s, the ideas that they had developed together with the work done in artificial intelligence and expert systems gave rise to such concepts as knowledge acquisitions, knowledge engineering and knowledge-based systems and other computer-based ontologies. These developments gave further impetus to the growth of systems for managing knowledge.

As more thinkers and scholars publish their works, the phrase “knowledge management” formally became part of the lexicon of management. And in order to provide a technological base for managing knowledge, a consortium of US companies started in 1989 the “Initiative for Managing Knowledge Assets”. Consequently, numerous KM-related articles began appearing in journals like *Sloan Management Review*, *Havard Business Review*, and others. Simultaneously, the first books on organisational learning and knowledge management were published, including Senge’s *The Fifth Discipline* and Sakaiya’s *The Knowledge Value Revolution* (Uriarte, 2008).

By 1990 a growing number of academics and consultants had started talking about KM as the new business practice. At the same time a significant number of large management consulting firms had begun in-house KM activities and several well established US, European and Japanese firms instituted focused KM programmes. The agenda of many conferences also started to include KM as a main item for discussion. However, the introduction of KM in the popular press came in 1991 when Tom Stewart published the article Brainpower in *Fortune magazine* (Woods, 2004). This was followed by many more articles written by Nonaka,

Stewart, and others. Nevertheless, business executives and professionals did not show widespread interest in the subject.

It was only in 1995 when KM in its current form first received significant attention among corporations and organisations (Uriarte, 2008). This came about as a result of the publication of the seminal book by Ikujiro Nonaka and Hirotaka Takeuchi titled *The Knowledge Creating company: How Japanese Companies Create Dynamics of Innovation*. In September of the same year, Arthur Andersen and the American Productivity Quality Center (APQC) co-sponsored the “Knowledge Imperative Symposium” in Houston, which was followed by many more similar conferences and publications. Of the many publications that came out, the more popular titles include Tom Stewart’s “Intellectual Capital”, Karl Erik Sveiby’s “The New Organisations’ Wealth”, and Verne Alle’s “The Knowledge Revolution”. Butterworth-Heinemann also launched a series – “Resources for Knowledge-based Economy” – and started publishing an annual yearbook.

By the mid-1990s, it became widely recognised that the competitive edge of some of the world’s leading companies was for the most part due to robust knowledge assets of those companies (Bergeron, 2003). With this realisation, the management of knowledge suddenly became a mainstream business objective. At the same time, nurturing knowledge assets such as competencies, customer relationships and innovations became a focus of attention of many corporations. And other companies started emulating the KM practices of the market leaders.

The International Knowledge Management Network (IKMN), which started in Europe in 1989, went online in 1994. It was soon joined by the Knowledge Management Forum, based in the United States. Shortly thereafter, many other KM-related groups and publications started appearing. There was a tremendous increase in the number of KM conferences and seminars as organisations focused on managing explicit and tacit knowledge and leveraging these resources to achieve competitive advantage. In the same year, IKMN published the results of a KM survey conducted among European firms. In 1995 the European Community began offering funding for KM-related projects through ESPRIT programme.

By the end of the 1990s, big businesses started implementing KM solutions (Keyes, 2006). KM became a rage and came to be seen as a highly desirable business process re-engineering initiative. As a result, KM projects became big business and source of revenue for major international consulting firms such as Ernst and Young,

Arthur Andersen, and Booz-Allen and Hamilton. In addition, a number of professional organisations interested in such related areas as benchmarking, best practices, risk management, and change management began exploring the relationship between KM and their areas of special expertise. These included reputable organisations like APQC and the American Society of Information Science.

There are now large number of practitioners in the field of KM and a phenomenal growth in the number of periodicals and magazines with KM in their title (Uriarte, 2008). These include publications like *Knowledge Management*, *Knowledge Management Magazine*, *Knowledge Management Review* and *The Journal of Knowledge Management*, which all provide valuable and timely information for knowledge managers, including case studies, and guidance from various experts.

As eventful as KM's history is, majority of the activities that culminated into its phenomenal development took place in the US, Europe and Asia. An extensive search of both local and foreign literature retrieves no documentary evidence about KM practices in any organisation either public or private from Africa in general and Nigeria in particular. Could it be that these organisations have not recognised the value of their knowledge assets as to consider its management or that they are not aware of the KM concept or that they practice KM but their efforts are not reported in the literature?

2.3 Knowledge Management Processes

Over the years, a number of frameworks for the practice of knowledge management has emerged with many containing various familiar management processes (Wiig 1997; Davenport and Prusak, 1998; Tiwana, 2000). These frameworks are both generic and specific in scope. The generic frameworks characterise the various elements of KM while the specifics aim at specific aspects of KM such as knowledge conversion or transfer (Demarest 1997; Van de Spek and Spijkervet, 1997; Holsapple and Joshi, 1999).

The frameworks can also be descriptive in nature, identifying key KM phenomena, or perspective in that they prescribe methodologies for the conduct of KM (Beckman, 1997). They can also be compared on both context and content dimensions. The context dimension refers to the focus or primary intent of the framework, and the content dimension refers to knowledge resources and those activities and factors that facilitate its management (Song, 2007)

Within the knowledge management cycle, there have been many models created to depict knowledge management process (Bontis, 2001; Al-Ali, 2002; Skyrme, 2003). McAdam and McMreedy (1999) classified knowledge management models into three categories namely: knowledge category, intellectual capital and social construction. For example, Nonaka and Takeuchi's SECI model is a knowledge category model; Skandia Financial services created an intellectual capital model; Firestone and McElroy (2003) proposed a socially constructed model, which links knowledge intrinsically with the social learning process within an organisation. Although the model provides insights and opportunities for analysis and reflection, they can be prescriptive and contextual and based on the perceptions of individuals at certain points in time (Song, 2007).

KM is largely regarded as a process involving various activities to deal with knowledge (Alavi and Leidner, 2001). The KM activities range from knowledge generation and codification to transfer of knowledge (Ruggles, 1997; Alavi and Liedner, 2001). As the case with a generally accepted definition of KM, a similar lack of consensus exists with respect to the terms used to describe the major steps in the KM cycle (Dalkir, 2005). However closer inspection reveals that the differences are not really that great. The terms used differ, but there are some overlaps in the different types of steps involved in a KM cycle.

Four major KM life cycle model feature prominently in the KM literature. These four models are the Zack KM cycle (Meyer and Zack, 1996) the Bukowitz and Williams (2000) KM cycles, the McElroy (2003) KM cycle and the Wiig (1993) KM cycle. The Zack KM cycle is derived from work on design and development of information products (Meyer & Zack, 1996). They propose that research and knowledge about the design of physical products can be extended into intellectual realm to serve as the basis for a KM cycle. According to Dakir (2005), this approach provides a number of useful analogies, such as the notion of a product platform (the knowledge repository) and the information platform (the knowledge refinery) to emphasise the notion of value-added processing required in order to leverage the knowledge of an organisation.

The Meyer and Zack cycle processes are composed of the technologies, facilities and processes for manufacturing products and services. The authors suggest that information products are best viewed as a repository comprising information content and structure. They analysed the major developmental stages of a knowledge

repository and mapped these stages onto a KM cycle. The stages are acquisition, refinement, storage/retrieval, distribution, and presentation/use. They refer to this cycle as the refinery.

Bukowitz and Williams (2000) describe a knowledge management process framework that outlines how organisations generate, maintain and deploy a strategically correct stock of knowledge to create value. In this framework, knowledge consists of knowledge repositories, relationship, information technologies, communication infrastructures, functional skill sets, process know-how environmental responsiveness, organisational intelligence and external source. The KM cycle is made up of seven stages namely: get, use, learn, contribute, assess, build and sustain, and divest. The get, learn and contribute phases are tactical in nature; while the assess, build/sustain or divest stages are more strategic (Dalkir, 2005). The tactical phases are triggered by market-driven opportunities or demands and they typically result in day-to-day use of knowledge to respond to these demands. Strategic stages, on the other hand, are triggered by shifts in the macro environment.

The McElroy KM cycle consists of the processes of knowledge production and knowledge integration, with a series of feedback loops to organisational memory benefits, and claims and the business processing environment. McElroy emphasises that organisational knowledge is held both subjectively in the minds of individuals and groups; and objectively in explicit forms. He posits that in knowledge production, the key processes are individual and group learning; knowledge chain formulation; information acquisition; codified knowledge chain; and knowledge chain evaluation. Also, McElroy describes knowledge integration as the process by which an organisation introduces new knowledge chain to operating environment and retires old ones. The process includes all knowledge transmission processes such as teaching, knowledge sharing and other social activities that either communicate an understanding of previously produced organisational knowledge to knowledge workers or integrate newly muted knowledge. According to Dalkir (2005), one of the main strengths of the McElroy cycle is the clear description of how knowledge is evaluated and a conscious decision is made as to whether or not it will be integrated into the organisational memory. It focuses on processes to identify knowledge content that is of value to the organisation and the employees.

The Wiig KM cycle emphasises that knowledge is the principal force that determines and drives the ability to act intelligently. The cycle addresses how

knowledge is built and used by individuals or by organisations based on four major steps namely: building knowledge; holding knowledge; pooling knowledge; and applying knowledge. The cycle addresses a broad range of learning from all types of sources; personal experience, formal education or training, peers, and intelligence from all sources. It focuses on identifying and relating the functions and activities engaged in by knowledge workers to make products and services. A major advantage of the Wiig approach to the KM cycle is the clear and detailed description of how organisational memory is put into use in order to generate value for individuals, groups and the organisation itself (Dalkir, 2005). The numerous ways in which knowledge can be applied and used are linked to decision making sequence and individual characteristics.

On the basis of the four major approaches to KM cycle, Dalkir (2005) distilled an integrated KM cycle that comprises of 3 major stages namely: knowledge capture and/or creation; knowledge sharing and dissemination; and knowledge acquisition and application. The integrated KM cycle posits that, in the transition from knowledge capture/creation to knowledge sharing and dissemination, knowledge content is accessed. Knowledge is then contextualised in order to be understood (“acquisition”) and used (“application”). This stage then feeds back into the first one in order to update the knowledge content. For the purpose of this research the integrated KM life cycle is adopted with emphasis on the two stages of KM process — knowledge capture/and creation and knowledge sharing and dissemination. The reason for leaving out the knowledge application is that it is largely believed in literature that once knowledge is created and shared it will be applied effectively (Nonaka and Takeuchi, 1995; Gold, Malhotra and Segars, 2001).

The first element of KM is knowledge capture and creation. Knowledge is continually being created in any group, corporation or organisation since interaction among people generates knowledge (Uriarte, 2008). One of the primary aims of KM is to capture the knowledge that is produced during interactions. As a consequence of the highly competitive nature of today’s market, there is increasing need within corporations and organisations to create new knowledge, generate novel ideas and concepts, and to capture these knowledge ideas and concepts. The survival of a corporation sometimes depends largely on how much new and advanced knowledge it can generate, capture and utilise in order to produce a more competitive or attractive product or service. Unless an organisation is able to create new products,

develop more efficient manufacturing processes, or introduces improvements in design or function, it will have great difficulty in competing in fast changing markets.

Conway and Sligar (2002) make distinctions between the processes of capturing or identification of existing knowledge and the creation of new knowledge in an organisation. Capturing knowledge is the process of identifying business related information or static knowledge that supports and builds the organisation's asset value. In most organisations, explicit or already identified and coded knowledge typically represents only the tip of the iceberg (Dalkir, 2005). Traditionally, information systems department deal primarily with highly structured data that make up small fraction of a company's information. However, there are other knowledge that are yet identified and others that are present in the organisation but not tangible. It is therefore necessary to take additional steps to capture and codify such knowledge for use and reuse in the organisation. This is the essence of knowledge capture and creation.

According to Conway and Sligar (2002), the cycle of knowledge creation includes the conversion of the tacit (the things we know and do) to the explicit (physical manifestation of our knowledge) and presenting the result in such a way to encourage reuse and generate new knowledge. Many writers in the field of business and organisational management, including Ikujiro Nonaka and Hirotaka Takeuchi (1995), in their book, *The Knowledge-creating company*, theorise that knowledge is created in evolutionary stages comprising:

- personal discovery (development of understanding based on experience);
- shared understanding (producing document, code, or other physical expression of your experience for others to view);
- combining/reuse (taking shared knowledge and producing new knowledge or value through reuse or enhancement); and
- researching (seeking and absorbing information in the public or semi-public domain).

These stages of knowledge evolution assume that to be fully utilised, knowledge must be converted from a tacit form (what an individual knows) to an explicit form, (what can be viewed, reviewed, and reused by others).

According to Keyes (2006), knowledge capture is an unclear process because there is no single best way of doing it. The approach required depends on the kind of business, culture and the ways in which people solve problems in an organisation

(Dalkir, 2005). Some organisations generally deliver standard products and services, while others are constantly looking for new ways of doing things. Knowledge capture can therefore span a whole host of activities from organising customer information details into single database to setting up a mentoring programme. Both explicit and tacit knowledge need to be captured. Knowledge about standardised work, for example can be described explicitly and is easily captured in writing. On the other hand, where there is innovation and creativity, people also need some direct contact (Morman and Miner, 1997). Knowledge capture cannot therefore be a purely mechanistic process because it has to do with the discovery, organisation, and integration of knowledge into the fabric” of the organisation (Dalkir, 2005). Knowledge has to be captured and codified in such a way that it can become a part of the existing knowledge base of the organisation. Knowledge that is not captured in this way becomes devalued and is eventually ignored.

A wide variety of techniques have been identified in literature to be used for capturing and codifying knowledge, and many of these techniques have their origins in fields other than knowledge management. The technique for capturing knowledge depends on the KM approach being adopted by an organisation. Keyes (2006) identified five approaches namely: problem solving; organisational learning; organisational design; cultural; and advanced techniques approaches. Problem solving approach develops a number of knowledge capture techniques including: exit interviews; speed dating and mind mapping. Organisational learning is a key component of any KM strategy or any attempt to harness the experience of an organisation to improve its performance. A number of techniques developed to support organisational learning include: after-action reviews; project reviews; and baton passing. Organisational design approaches are more formal than those of problem solving and organisational learning because they have strong relation with organisational change and redesign. Such techniques are virtual teams, and coaching and mentoring.

Many of the most effective KM approaches have their basis in understanding the cultural aspects of organisational behaviour and in concentrating on improving the cultural bias toward sharing knowledge or other information. Two major knowledge capturing techniques are commonly used by organisations adopting this approach and these are: identifying intellectual capital and building communities of practice. The advanced technique KM approach adopts capturing techniques such as social network

analysis; knowledge audits; design of space; knowledge harvesting; domain knowledge mapping and storytelling. These techniques enable an organisation to learn from customers, from itself, and other organisations.

Knowledge capture and codification have strategic implications on an organisation. According to Field (2003), knowledge capture and codification are particularly critical when an issue of knowledge continuity arises. Whereas KM is concerned with capturing and sharing know-how valuable to colleagues performing similar jobs throughout a company, knowledge continuity management focuses on passing critical knowledge from existing employees to their replacements. At its core, knowledge continuity management is about communication (Field, 2003) – employees need to understand just what it is that they know, that others need to know, and why this content needs to be shared with their peers.

The second element of KM is knowledge sharing. It is probably the most crucial of all the KM cycle stages because it is during this process that knowledge is usually redefined and enriched (Uriarte, 2008). Once knowledge has been captured and codified it needs to be shared and disseminated throughout the organisation. With the advent of personal computers and the World Wide Web, it seems to be implicitly assumed that all web users are good researcher or searchers. Unfortunately, this has not been accompanied by any type of training or what is sometimes referred to as “information literacy”, which is defined as “a set of abilities requiring individuals to recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information (ALA, 1989).

According to Dalkir (2005), “information seeking” rarely appears as a requirement in job descriptions, and yet International Data Corporation (IDC) (Feldman, 2004) estimates that knowledge workers spend from 15 to 35% of their time searching for information. These workers typically succeed in finding what they seek less than 50% of the time. This means that although 80 to 85% of a company’s information is hard-to-access tacit knowledge; it does not appear that explicit knowledge is anyway easier to find and use. One IDC estimate (Feldman, 2004) found that 90% of a company’s accessible information is used only once. The amount of time spent reworking or re-creating information is increasing at an alarming rate. The IDC study estimates that an organisation with 1000 knowledge workers loses minimum of 6 million dollars per year in time spent just searching for information.

Therefore, there is a cost to not finding information, although impossible to measure exactly.

In 2000, the IBM institute conducted a survey of 40 managers at large accounting organisation to identify the sources of information people used in organisations that had a well- developed knowledge management system or infrastructure (Bartlett, 2000). The results show that people still first turned to people in order to find information, solve problems, and make decisions. In fact, the company knowledge base was ranked only fourth among the five choices for preferred sources of information.

Cross and Parker (2004) found that people are the most critical conduits of information and knowledge. Knowledge workers typically spend a third of their time looking for information and helping their colleagues do the same. A knowledge worker is five times more likely to turn to another person rather than an impersonal source such as database or knowledge management systems. Only one out of five workers consistently finds the information needed to do their jobs, and Cross and Parker (2004) have found that knowledge workers spend more time re-creating existing information they were unaware of than creating original material. A similar type of study was undertaken with a large aviation company in the United States (Dalkir, 2005). This longitudinal study, which took place over seven years, studied the ways individuals in the large organisation sought out and found information. The research team actually sat down with and observed highly skilled professionals as they went about their daily work. Not only did these workers prefer to contact other people in order to find, retrieve and make use of information, it also turned out to be a more successful strategy to use.

Other people are the preferred source of information for a number of reasons. According to Dalkir (2005), human source of information is often faster and more credible than other sources. Talking to other people provides a highly valuable learning activity that is primarily a tacit-tacit knowledge transfer, for this type of knowledge is seldom rendered explicit, nor is it captured in any form of document.

All these studies point to one key dimension and that is that learning is a predominantly social event (Cohen and Prusak, 2001). Due to the large number of employees and the fact that they may not all be in close proximity to one another, present-day organisations have difficulty providing opportunities for social one-to-one knowledge exchanges to continue to exist in their traditional form. Nevertheless,

technology offers a new medium through which employees who share similar professional interests, problems and responsibilities can share knowledge.

According to Uriarte (2008), knowledge sharing can be enhanced through the implementation of appropriate technologies, operations and systems that stimulate collaboration, facilitate the process of sharing, and reward those individuals that share the most knowledge as well as the individuals that actually utilise knowledge that have been shared. Knowledge can be shared through electronic mail (e-mail) groups, discussion groups, and other interactions in some sort of virtual shared work place that is typically hosted by the organisation's intranet. These groups are often referred to as communities of practice (CoPs). Communities of practice are described by Gamble and Blackwell (2001) as collections of individuals who share a similar work role in a common context bound by informal relationship. According to Wenger (1998), communities of practice are the prime context in which individuals work out common sense, highlighting the social and negotiated character of both the explicit and tacit in one's life. The American Heritage Dictionary by Pickett (2006) refers to a community of practice as a group of people having common identity, professional interests and that undertake to share, participate and establish a fellowship. Similarly Seufert, Krogh and Bach (1999) and Adams and Freeman (2000) define a community of practice as a group of people, along with their shared resources and dynamic relationships, who assemble to make use of shared knowledge, in order to enhance learning and create a shared value for the group.

The term community suggests that these groups are not constrained by typical geographic, business unit or functional boundaries but rather by common tasks, contexts and interests. The word "practice" implies knowledge in action - how individuals actually perform their jobs on a day-to-day basis as opposed to more formal policies and procedures that reflect how work should be performed. Communities of practice have been proved to be an excellent means to share knowledge among people who have a common interest. As a result of their continuing interaction with one another, through the use and application of information and communication technologies, the members of the community enrich their knowledge and expertise in that particular area. Communities of practice provide their members with very powerful cooperative tools for further developing their expertise and abilities. These groups are an effective and flexible means to examine some knowledge issues and gain further insights into specific knowledge domains.

Gamble and Blackwell (2001) identify social capital as a characteristic of communities of practice that affect the creation and sharing of knowledge. They define three inter-related dimensions of social capital. The first is the structural dimension which refers to informal networks that allow individuals to identify others with potential resources which they themselves are lacking. The second is the relational dimension which addresses interpersonal dynamics such as trust, shared beliefs, and expectations. Lastly, the cognitive dimension which refers to a common context and language to build social capital. Improvements in the performance of a community of practice through building social capital are argued to improve flexibility, agility, and the organisation's ability to respond to problems (Gamble & Blackwell, 2001).

Many progressive organisations rely on communities of practice to maintain professional excellence of project teams regardless of where the members of the team may be geographically located. Because communities of practice facilitate knowledge sharing they are critical to overcoming the challenges involved in the creation, sharing, dissemination and use of knowledge (Uriarte, 2008). Examples of organisation that have implemented communities of practice are Ericsson Canada Ltd (Hemre, 2005); ICL Ltd (Lank, 1997) and World Bank (Uriarte, 2008). In many organisations, communities of practice are informal groupings that are separate from but are not in conflict with the formal organisational structure of hierarchy (Uriarte, 2008). They act as parallel responsibilities and accountabilities of staff members. Communities of practice can continue indefinitely as long as there are groups of people that are interacted in sharing knowledge.

2.4 Enablers of Knowledge Management Practices

KM is not only about managing processes but it also includes managing and creating organisational structure and culture that facilitates and encourages the creation, storing, sharing and application of knowledge that enables a corporate strategic advantage (Walczak, 2005). If organisations introduce a knowledge management initiative without having a managerial support structure in place, they will soon find that the investment in KM does not produce the benefits they strived for.

A broad range of factors that can influence the success of KM implementation has been mentioned in the literature. For example, much has been stated about culture, information technology (IT) and leadership as important considerations for its accomplishment. However, majority of the studies are limited to large organisations in advanced countries with none of such efforts reported about Nigerian organisations.

Based on the insights gleaned from the study of practices and experiences of leading companies in the field of KM, Skyrme and Amidon (1997) highlighted seven key success factors. These include a strong link to a business imperative, a compelling vision and architecture, knowledge leadership, a knowledge creating and sharing culture, continuous learning, a well-developed technology infrastructure and systematic organisational knowledge processes. These factors would certainly need to be considered by organisations formalising KM or transforming themselves into true knowledge-based enterprises.

Davenport et al (1998) conducted an exploratory study on 31 KM projects in 24 companies. One of the aims was to determine the factors associated with their effectiveness. Before doing so, they evaluated the performance of the project using indicators analogous to those for assessing the success of other business change initiatives. As a result, 18 projects were classified as successful from which eight common success factors were identified. They were linking KM to economic performance or industry value, a clear purpose and language, a standard flexible knowledge structure, multiple channels for knowledge transfer, a knowledge-friendly culture, a technical and organisational infrastructure, change in motivational practices, and senior management support. It was further stated that while the last four factors were the hardest to develop, they were also the ones that mattered most. However, since this was an exploratory study, Davenport et al (1998) agreed that linking the identified factors to the success of KM should be viewed as hypothesised, not proven.

Liebowitz (1999) proposed six key ingredients that could make KM successful in organisations. He suggested the need for a KM strategy with support from senior leadership, a chief knowledge office (CKO) or equivalent and a KM infrastructure, knowledge ontologies and repositories, KM systems and tools, incentives to encourage knowledge sharing and a supportive culture. Specifically, important lessons learnt from firms who were early adopters of KM were used to support his propositions. In the first ingredient, he advocated the creation of a centre of expertise for every knowledge discipline or subject matter, as a KM strategy which could be

undertaken by organisations. The resource requirement for such an activity could be tremendous and this reflects a focus towards those organisations that have the necessary expertise, human and financial resources.

Holsapple and Josh (2000) carried out a study to investigate the factors that can influence the management of knowledge in organisations. First, they derived a set of factors from various literature sources. Then they conducted a Delphi study (getting views of experts) comprising an international panel of KM academics and practitioners to further explore and evaluate the factors that they had developed earlier. They proposed three major classes of influences (managerial, resource and environmental), with different factors in each. Managerial influences comprised four main factors, coordination, control, measurement and leadership; resource influences consisted of knowledge, human, material and financial resources; whereas environmental influences included factors such as competition, markets, time pressure, governmental and economic climates, etc.

From the evaluation of their Delphi study, it was reported that there was a lack of detailed inclusion of technology and culture as critical factors. For example, culture was not explicitly presented but was only included as a sub-concept under the knowledge resource factor, a representation that is somewhat insignificant. In the authors' opinion, culture is very important consideration for KM and it should be represented as a factor, rather than as a sub-element of another. Certain factors were also perceived to be missing such as knowledge infrastructure, communication, training, education, organisational planning, strategy setting and reward issues. In addition it was argued by one of the panellists that process of implementing KM would entail the need for sponsorship, support and understanding, not merely leadership as proposed by the authors. All these concerns should be considered in an effort to further develop and refine the critical factors.

Choi (2000) conducted an empirical study of factors affecting successful implementation of KM based on survey responses of 217 participants from different sectors. The research concluded that top management leadership, fewer organisational constraints and information systems infrastructure were the three critical success factors for KM to succeed. Chourides et al (2003) identified various critical factors for successful KM implementation in five organisational function areas: strategy, human resource management, (HRM), IT, quality and marketing. Their work was built upon an earlier questionnaire survey of the Financial Times Stock Exchange

(FTSE) 100 companies as well as a review of existing literature to identify key practices and factors for adopting KM. Subsequently, they conducted a longitudinal study in eight case organisations, which were at various stages of implementing KM programmes to further compare and assess their critical success factors. In particular, interviews with key staff of these organisations were conducted for this purpose. They presented their critical success factors as “a list of things to do” rather than a set of CSFs as suggested by other authors such as Skyrme and Amidon (1997) and Daveport et al (1998). An in depth scrutiny of these critical factors unveils some emerging concerns and issues.

Wong (2005) feels that some of the factors are too specific which might be hard to generalise across organisations. For example, they suggested monitoring the “KM people portfolio matrix” as critical factor for KM in the human resources management (HRM) area. This matrix, according to Wong (2005), is merely one of the many techniques that can be utilised to facilitate the conduct of a people audit. Arguably, organisations can also employ other alternatives to monitor their people in order to be successful in KM.

Organisational culture is an important factor for successful implementation of KM (Martensson, 2000). It defines the core benefits; value, norms, and social customs that govern the way individuals act and behave in an organisation. In general a culture that is supportive of KM is one that highly values knowledge and encourages its creation, sharing and application. The biggest challenge for most KM efforts actually lies in developing such a culture (Wong, 2005). A survey reported by Chase (1997) affirms that culture was the largest obstacle faced by organisations in creating successful knowledge-based enterprises. In fact, Nicolini, Puvell, Conville and Martinez-Solano (2008) assert that organisations that have shared common values and culture have an advantage when implementing a KM system.

Since culture is a wide concept, it comprises of many facets. One cultural aspect which is crucial for KM is collaboration. Goh (2002) asserts that a collaborative culture is an important condition for knowledge transfer to happen between individuals and groups. This is because knowledge transfer requires individuals to come together to interact, exchange ideas and share knowledge with one another. Not only this, collaboration has also been empirically shown to be a significant contributor also to knowledge creation (Lee & Choi, 2003).

Trust is also another fundamental aspect of a knowledge friendly culture (Stonehouse & Pemberton, 1999; De Tienne and Jackson, 2001; Lee and Choi, 2003). Without a high degree of mutual trust, people will be sceptical about the intentions and behaviours of others and thus, they will likely withhold their knowledge. Building a relationship of trust between individuals and groups will help to facilitate a more proactive and open knowledge sharing process. Plessis (2007) argued that there needs to be a 'knowledge creating and sharing culture' with trust and openness for an organisation to successfully implement KM.

Besides this, there is a need to foster an innovative culture in which individuals are constantly encouraged to generate new ideas, knowledge and solutions. Likewise, Goh, (2002) suggested a culture which emphasises problem seeking and solving. Individuals should also be permitted to query existing practice and to take actions through empowerment (Stonehouse and Pemberton 1999). By empowering individuals, they will have more freedom and opportunities to explore new possibilities and approaches. Equally important is the element of openness whereby mistakes are openly shared without fear of punishment. In this respect, reasonable mistakes and failures are not only tolerated but allowed and forgiven. Making mistakes should be viewed as an investment process in individuals because it can be a key source of learning.

A number of studies such as Magnier-Watanabe and Senoo (2008); Seidler-de Alwis and Hartmann (2008); Claver-Cortes et al (2007); Hsu (2006) and Yeh et al, (2006) has found that KM can be facilitated by an organisational culture that is horizontal or flat in structure, with very few or no hierarchy levels. These studies also put forth that an organisation should emphasise the importance and value of people as a main resource, encourage teamwork, and enable knowledge sharing. Owing to the highly influential nature to the success of KM, Davenport et al (1998) assert that companies should ensure that their KM initiatives fit into their organisational culture, or else they should be prepared to change it. The importance of matching a KM initiative with the culture, style and core values of an organisation was also highlighted by McDermott and O'Dell (2001).

There is a lack of research investigating KM as a function of organisational culture. Most studies on the relationship between organisational culture and KM processes focus on the influence of organisational culture on knowledge sharing and concentrate on single factors of organisational culture. For instance, factors such as

trust among coworkers, interaction between staff, existence of reward systems and participative decision making have been shown to positively impact knowledge sharing (Al-Alawi et al, 2007). The impact of organisational culture on KM is also highlighted by Janz and Prasarnphanich's (2003) theoretical model. The model explains the relationships between knowledge related activities and organisational and individual characteristics that promote the creation and dissemination of knowledge throughout an organisation. They argue that knowledge flow in an organisation depends on employees trust in the organisation as well as in particular individuals. They suggest that organisations that provide a climate of trust built on culture encourages and provides incentives for sharing knowledge. In summary, literature relating to the relationship between organisational culture and KM processes is still scarce and focuses primarily on the impact of single factors of organisational culture on knowledge sharing.

Another central aspect for implementing KM is the development of an appropriate organisational structure. This, according to Davenport et al (1998), implies establishing a set of roles and teams to perform knowledge-related tasks. Organisational structure is closely associated with organisational culture because it also facilitates collaboration (Kimble and Bourdon, 2008). Organisational structure is a formal system of task and authority relationships that control how people coordinate their actions and use resources to achieve organisational goals. Organisations can be structured on a continuum of being either totally centralised or decentralised (Davidson and Griffin, 2006). Each alternative has advantages and disadvantages, depending on the objectives of the organisation (Jones, 2007). An advantage of centralisation is that it allows top managers to coordinate organisational activities and keep the organisation focused on its goals or mission. However, centralisation can be problematic when top managers become overloaded and immersed in operational decision. Decentralisation has the advantage of promoting flexibility and responsiveness because it allows lower level managers to make on-the-spot decisions. The disadvantage of this is that if so much authority is delegated such that managers at all levels can make decisions, planning and coordination become difficult.

Stonehouse and Pemberton (1999) opine that centralised structures will discourage interdepartmental communications and frequent sharing of ideas due to time-consuming communication channels; it also causes distortion and discontinuity of ideas. They however submit that decentralised structures will facilitate an enabling

environment for employees to participate in the knowledge building process more spontaneously. Priestley (2006) also asserts that a decentralised structure can facilitate innovation and new knowledge creation without the hindrance of a formal centralised hierarchy. Some authors have suggested that organisations may require a whole new organisational structure or transform conventional structures to support knowledge culture (Oliver and Kandadi, 2006) for successful KM implementation. For example, Dwivedi, Bali and Naguib (2005) suggested that it might be important for an organisation to develop a common language (or, an ‘organisational thesaurus’) to ease the communication within the organisation.

As it is common with all change and improvement programmes, support and commitment from senior management is critical to a KM implementation (Davenport et al, 1998; Truch, 2001; Jarrar, 2002 and Sharp, 2003). Leaders are important in acting as models to exemplify the desired behaviour for KM. They should for example, exhibit a willingness to share and offer their knowledge freely with others in the organisation, to continuously learn, and to search for new knowledge and ideas. It is vital they model their behaviours and actions through deeds, not just words. By doing so, they can further influence other employees to imitate them and increase the propensity of employees to participate in KM. Other leadership competencies that would be important include steering the change effort, conveying the importance of KM to employees, maintaining their morale, and creating a culture that promotes knowledge sharing. In essence, leaders establish the necessary condition for effective KM (Holsapple and Joshi, 2000). Therefore, knowledge-oriented organisations are establishing structures that promote ongoing and practical support from top management that could translate to concerted efforts that contribute to successful KM.

In order to properly coordinate KM, some organisations are creating KM department and designating Chief Knowledge Officer (CKO) in order to promote KM and demonstrate its strategic importance (Uriarte, 2008). According to Guns (1997), a CKO’s primary role is to convert knowledge into profit by leveraging the corporation’s intellectual assets. S/he has strategic responsibility to:

- develop new capabilities to continually refine curriculum to enhance skills and capabilities; and use best knowledge with clients and customers;
- ensure the right kind of technology is in place,
- manage patent portfolios by assigning values to them and leveraging underutilized assets;

- warehouse and track information and maintain a knowledge inventory;
- tie people together through information systems, telecommunications and Knowledge Management;
- identify valued skills, knowledge, and expertise in the corporation;
- collect best practices; and
- provide the necessary human support to back up the Knowledge Management system.

She/he takes the leading role to coordinate, manage and set the cause for KM (Earl and Scott 1999).

Moreover, effective KM requires that people be specifically assigned to every stage of the process – including collecting, organising, adding value, disseminating and supporting its use (O’Dell, Elliot and Hubert, 2004). Consequently, successful implementation of KM requires an organisational structure that assigns responsibilities throughout the organisation in line with its goals and strategies. Such structure should be formidable enough to make knowledge sharing possible and easy for all employees. One way to provide a solid organisational structure for a successful KM implementation is by creating a KM department with a strong leadership and sponsorship at the executive level. This is necessary in order to ensure substantial funding and organisational change.

Successful KM requires the development of a “grass root desire among employees to tap into their company’s intellectual resources” (Hauschild, Licht and Stein, 2001). If individuals are not motivated to practice KM, no amount of investment, infrastructure and technological intervention will make it effective. Hence, one of the important factors is to establish the right incentives, rewards or motivational aids that encourage people to share and apply knowledge. Giving incentives to employees helps to stimulate and reinforce the positive behaviours and culture needed for effective KM.

In order to build a knowledge-based enterprise, incentive systems should be focused on criteria such as knowledge sharing and contribution, teamwork, creativity and innovative solutions. Yahya and Goh (2002) stated that such systems should reward risk-taking attitudes and emphasis group-based compensation. In particular, rewarding employees with a focus on group performance will instigate a higher level of knowledge exchange between them. Hauschild et al (2001) extended this notion by stating that employees will be more inclined to seek and contribute knowledge if their

incentives are based on goals that they can influence, but not achieve on their own. Linking rewards solely to individual performance or outcome which can result in competition will certainly be detrimental to a knowledge sharing culture (Wong, 2005).

The provision of both monetary and non-monetary benefits could be incorporated into a reward system that supports KM. In addition, approaches to motivate employees and recognise their contributions should also be tied to their annual job performance review. This implies treating KM practices as important criteria in an employee's performance evaluation and assessment system (Trussler, 1998; Buckman, 1998).

It is indisputable that one of the key enablers for implementing KM is information technology (IT). Technology enables and provides the entire infrastructure and tools to support KM within an enterprise. While cultural and organisational changes are vital to achieving a KM strategy, a lack of the proper tools and technology infrastructure can lead to its failure (Uriarte, 2008). IT can enable rapid search, access and retrieval of information, and can support collaboration and communication between organisational members. In essence, it can certainly play a variety of roles to support an organisation's KM processes (Alavi and Leidner, 2001; Lee and Hong, 2002). However, it is noteworthy to recognise that IT is only a tool not an ultimate solution (Wong & Aspinwall, 2003).

In any KM system, three principal technology infrastructures are needed (Uriarte, 2008). They include technology for content management; technology for information search; and technology for locating appropriate expertise. Bixler (2002) highlights ten functional requirements that enterprises can select and use to build KM solutions. These are: capture and store; search and retrieve; send critical information to individuals or groups; and structure and navigate functions. Others are: share and collaborate; synthesize; profile and personalize; solve or recommend; integrate with business applications; and maintenance functions.

There is a broad collection of information technologies that supports KM. According to Luan and Serban (2002), they can be grouped into one or more of the following: knowledge-base software, collaboration software, content and document management solutions, portals, customer relationship management, data mining, workflow search, and e-learning. Important factors that need to be considered in the

development of a KM system include simplicity of technology, care of content and standardisation of knowledge structure and ontology (Wong, 2005).

Tyndale (2002) classifies knowledge management software tools into new and old. New tools are those specifically designed as knowledge management tools from their inception. Examples of these new tools are intranets, push technologies, agents, web portals, content management, and groupware. On the other hand, old tools are established data and information management tools that have entered into the knowledge management arena with extended functionality. Examples are databases, data mining, data warehousing, and workflow systems. According to Uriarte (2008), knowledge management solutions that manage both explicit and tacit knowledge must be enabled by a basic communications infrastructure. This basic infrastructure may include, among others, a portal, a virtual workplace or an e-mail environment. The need for such an enabler is greater in organisations that are spread out in many different locations (e.g. a transnational corporation with offices or factories in many countries) since there will be need to communicate and collaborate in productive and meaningful ways across considerable physical distances. However, to contribute effectively to knowledge management, the adopted technology must fit not only with the purpose but also with the behaviour, work practices and cultures of the organisations involved (Marwick, 2001). Therefore, the role of ICT in support of knowledge management and the impacting factors need to be further understood.

Information systems - designed to support collaboration, coordination and communication processes - can facilitate teamwork and thereby increase an individual's contact with other individuals, which in turn can accelerate the growth of knowledge creation (Alavi and Leidner, 2001; Nonaka, 1994). Similarly, Chennamaneni (2006) found through his empirical research that tools and technology that are perceived to be highly available and easy to use positively influence knowledge sharing.

2.5 Knowledge Management Practices in Organisations

Organisations are learning fast that knowledge is the primary economic unit of business in the 21st century just as the industrial revolution taught business managers to rely on mechanical engines and other technology in the 18th century (Conway and Sligar, 2002). There has been a paradigm shift in the cliché “knowledge is power”, within an organisation (Uriarte, 2008). In the past, the common attitude of

most people was to hoard knowledge since knowledge is considered as what makes an employee an asset to the organisation. But today, this perspective has changed. Knowledge is considered an enormous power that has to be shared within an organisation to gain competitive edge over rivals.

Drucker (1994) asserts that the performance capacity, if not survival, of any organisation will become increasingly dependent on the quality and productivity of knowledge in the organisation. This assertion informs Keursten et al's (2003) view that the application of knowledge adds more value than the traditional factors of production like capital, raw materials and labour. This supports Civi's (2000) assertion that "knowledge is the most important resource a company has that is worth more than land, labour and capital because it does not diminish in value like other traditional assets." Similarly, Conway and Sligar (2002) submit that knowledge – not money or technology – is the primary economic unit of business in the 21st century, and its management is essential for any company that hopes to compete effectively.

Competition is at the core of the success or failure of firms (Porter, 1998). Competition determines the appropriateness of a firm's activities that can contribute to its performance, such as innovations, a cohesive culture and good implementation. Competitive advantage stems from the many activities a firm performs in designing, producing, marketing, delivering and supporting its products. Each of these activities can contribute to a firm's relative cost position and create a basis for differentiation. Drucker (1993a) asserts that the source of long-term competitive advantage for any organization is derived from access to some form of the knowledge that it can exploit. According to Moroni (2006) the need for knowledge has sharply accelerated since 1980 to such an extent that there is now almost a unanimous recognition of the essential role of the creation and circulation of information and knowledge as a factor determining the competitive capacity of firms, the performance of economic systems and thus the rate and direction of economic growth.

Knowledge is increasingly being recognized as the new strategic imperative of organisations. The knowledge an organisation is able to harness forms its distinguishing business success and competitive advantage in the modern economy (Carlucci and Schiuma, 2006). According to Bergeron (2003), organised business since antiquity has sought competitive advantage that would allow it to serve customers as efficiently as possible, maximise profits, develop a loyal customer following, and keep the competition at bay regardless the type of products. This

competitive advantage is realised through the full utilisation of information and data coupled with the harnessing of people's skills and ideas as well as their commitments and motivations.

Penrose (1959) cited in Gao et al (2008) was the first to recognise the critical role of knowledge in organisations. He states that increase in knowledge not only causes the productive opportunity of firm to change in ways unrelated to changes in the environment, but also contributes to the "uniqueness" of the opportunity of each individual firm. This statement underscores the strategic role of knowledge to give competitive advantage to organisations that produce and utilise knowledge. Therefore, organizations that operate based on the successes of manufacturing-based, capital-intensive industrial economy of the past risk falling out of the alignment with the evolutionary direction of the future (Shariq, 1997).

Knowledge by itself does not produce value (Conway and Sligar, 2002). For it to furnish a sustainable competitive advantage, an organisation must have some form of exclusive or near exclusive ability to explore it (Beckett, Wainwright and Bance 2000). This exclusivity may arise from exclusive possession of the knowledge itself or the means to apply the knowledge. If there is no exclusivity, the competitive advantage is not sustainable, because other organizations will easily be able to enter the market and competition will eradicate profits. Therefore, organisations in their various sizes and status invest in KM practices in order to achieve competitive advantage and improve organisational performance.

KM is a key concern for many organisations because poor management of knowledge has been recognised to contribute to loss of organisational knowledge, expensive duplication of knowledge creation activities, high costs associated to knowledge and skills and reduced organisational competitiveness (Chase, 1997, Davenport and Prusak, 2000; Hariharan, 2002; Martin, 2000; Nonaka and Takeuchi, 1995; Rampasad, 2002; Stewart, Baskerville, et al, 2000; Takeuchi and Nonaka, 2004). Stewart et al (2000) and Chase (1997) assert that effective management of knowledge has consistently resulted in those organisations engaged in KM practices enjoying higher levels of corporate success and value than others who do not.

KM emerged from the fact that the creation and transfer of knowledge has become a critical factor in an organisation's success and competitiveness (Chawla and Joshi, 2010). As companies become more geographically dispersed and engaged with a growing number of suppliers, partners and customers, vital information about

processes or potentials of new products are likely to lie outside the organisation in the broader supply chain which makes it more important than ever to establish effective mechanisms to share knowledge (Economist Intelligence Unit, 2007)

Effectively implementing a sound KM strategy and becoming a knowledge-based company is seen as a mandatory condition of success for organisations as they enter the era of the knowledge economy (Davenport and Beck, 2002; Groves, 2002; Levett and Guenor, 2000). The purpose of managing and leveraging a company's knowledge is to maximise the returns to the organisation. This means being able to measure both the principal investment and the yield from that investment at regular intervals (Bose, 2004).

There is a strong interest for KM in the business community. A number of projects on KM have been initiated by organisations worldwide keeping in view the kind of benefits that can be derived. Davenport et al (1998) submit that such projects are attempts to do something useful with knowledge to accomplish organisational objectives through the structuring of people, technology and knowledge content.

A survey conducted in 1997 of 200 large US firms reveals that 80% of corporations had KM initiatives (KPMG, 2000). Covin and Stivers (1997) cited technological innovation as a major reason for the current interest in KM. In addition, Dalkir (2005) assert that the major business drivers behind today's increased interest in and application of KM lie in four key areas namely: globalisation of business, leaner organizations, "corporate amnesia" and technological advances. He explains corporate amnesia as problems of knowledge continuity for organisations created by the mobility of today's workforce. This place continuous learning demands on the knowledge worker as they are no longer expected to spend their entire work life with the same organisation.

The systematic sharing of knowledge is assuming a larger role in all kinds of organisations around the World (Luen and Al-Hawamdeh, 2001). However, majority of the documented KM initiatives in organisations are concentrated in the USA, Europe and Asia. There is a dearth of documentary evidence of such efforts in Africa generally and Nigeria particularly. This is one of the gaps that the current research attempts to fill by studying the status of knowledge management practices in the Nigerian manufacturing industry.

Previous researchers have suggested a number of benefits accruing to organisations that implement KM. For example, Hofer-Alfeis (2008), Geiner,

Bohmann and Kremar (2007) and Hsu (2006) have maintained that KM helps an organisation to prevent possible loss of knowledge through resignation, turnover, and/or retirement. Similarly, it can help an organisation to gain greater competitive advantage and reorganisation of the company (Malhotra, 2005; van Winkelen and McDermott, 2008; and Yeung, Lai and Yee, 2007); it serves as a formal remedy of negative findings discovered during an audit (Jones, 2003). Other advantages include: to support continuous learning (Keane, Barber and Munive-Hernandez, 2007); to prevent low knowledge diffusion and/or the isolation of organisational departments, individuals, or community partners (Cha and Cu, 2005); to coordinate with other firms/suppliers/customers (Steiner and Hartmann, 2006); to increase the quality of professional services (Yeh, Lai and Ho, 2006); and to help meet users' needs (Lai, 2009).

2.6 Knowledge Management Practices and Manufacturing

The relevance of an appropriate management of corporate knowledge is rapidly increasing in modern manufacturing (Fischer and Stokic, n.d.) The business environment where manufacturing industries operate continues to change due to globalisation, advancement in technology, changes in managerial practices and other social factors. Consequently, manufacturing functions confront with new challenges in terms of market diversity, changing customer requirements, shorter product lifecycles, rapid market and technological changes, and the spread of advanced manufacturing technologies (Muhammed, 2006).

In the face of increasing competition and compliance requirements, manufacturers need to improve business processes in order to increase operational efficiencies; meet customer demands and manage products globally. Knowledge management offers manufacturers the opportunity to systematically and actively manage and leverage the stores of knowledge in their organisations for a competitive advantage (Sethi and Sethi, 2009) and to achieve other set goals.

Traditional manufacturing has a focus on managing physical assets, but current manufacturing environments focus on managing knowledge assets (Gunasekaran and Ngai, 2007). This shift of focus, according to Fischer and Stokic (n.d) is due to the fact that modern manufacturing companies have well recognized that knowledge represents their highest value and as a result put a great deal of investment in its management.

KM has been applied in manufacturing (Paiva, Roth and Fensterseifer, 2002; Wang, Luxhog and Johansen, 2004) in the areas of new product development (Ding and Peters, 2000), production management (Wagner, Najdam and Chung, 2000), continuous improvement system (Beckett et al, 2000), customer relationships management (Xu and Walton, 2005), supply chain management (Fan, Russell and Lunn, 2000); online procurement (Hsieh, Yang and Lin, 2002) human capital development (Birasnav and Rangnekar, 2010) and uncertainty management (Koh and Gunasekaran, 2006).

Krishnan (not published) in a PowerPoint presentation on knowledge management highlights some reasons for KM in manufacturing. These reasons include:

- manufacturing is becoming more collaborative than ever before;
- manufacturing needs history of previous product runs/projects on configuration, yield, machines, and documentation;
- improved productivity in terms of shorter cycle time, outsourcing, and cost control;
- need for everyone to get consistent information;
- destructive reorganization of professional skills;
- experts leaving the company;
- new recruits taking long time to acquire professionalism; and
- weak collective learning/capacity for innovation.

Similarly, Singh, Shankar, et al (2006), in a survey of knowledge management practices in Indian manufacturing industries, reveal four major reasons for using KM in the organizations studied, namely: ensuring competitive advantage; creating new knowledge for the organization, managing resources effectively, and developing new technologies and products. These preferences largely speak about what KM can readily offer to organizations.

Benefits derivable from implementing KM by manufacturing industries are similar to those of other organizations. According to Sorli et al (2005), these benefits are:

- overall improved business performances;
- improved working conditions and increase in employees satisfaction;
- improvement on customer satisfaction;
- reduction of product innovation cycle-time;

- reduction of time and efforts for solving product/process problems; and
- improvement of process efficiency and reduction of wastes.

Extant literature has reported efforts of a number of manufacturing industries at implementing KM to achieve some of the benefits highlighted above. For instance, Delgado-Hernandez, Wong and Wong (2010) assert that adhesives manufacturing company in Mexico practice KM to increase the number of customers and sales; improve processes ' control; increase production and innovation; enhance financial performance, capacity and competitiveness, and support decision-making process. Similarly, Gloet and Terhiovski (2004), report that implementation of KM contributes to innovation performance in manufacturing industries in Australia. Recently, Chawla and Joshi (2010) likewise report that a number of organizations in India have demonstrated how effective utilization of knowledge resources can contribute towards improving profitability.

The awareness of the facts that competencies often rely on individuals or on tacit knowledge special to the company; and that ICT are spreading, thus, creating new needs while making some knowledge obsolete have made companies to roll out different knowledge management practices as discovered in a Sessi C1S3 Survey by Kremp and Mairese (2002) in France. Four approaches to KM were identified in French manufacturing industries. These are: knowledge sharing culture; incentives policy to keep employees; partnerships for knowledge acquisition, written KM policy. According to Kremp and Mairese, knowledge sharing was in the lead: 28% of the manufacturing companies with 20 employees or more stated that they had a culture to promote knowledge sharing. About the same percentage of companies (27%) implemented an incentive policy to keep executives and employees in the firm, thereby seeking to avoid knowledge loss. Likewise, 23% of the industrial companies forged partnerships or alliances for knowledge acquisition. Written knowledge management policies were not as widespread (17%).

Although it is often argued that the manufacturing and engineering sectors have been the biggest beneficiaries from the KM discipline (Fischer and Stokic, n.d.), few research have been reported about KM in manufacturing (Gunasekeran and Ngai, 2007). Therefore, the present study seeks to add a voice to the few existing literature by investigating KM practices in Nigerian manufacturing industries in order to discover if there is an alignment in the practices in Nigeria and those found in literature.

2.6.1 The Manufacturing Industry in Nigeria

The manufacturing sector is regarded as a basis for determining a nation's economic efficiency (Amakom, 2012). But the situation cannot be described as the same with the Nigerian manufacturing industry because since after the discovery of crude oil in the late 1950's, the nation shifted its focus from developing its promising industrial production base and placed more premium on crude oil production foreign exchange earnings (Englama, Duke, Ogunleye and Ismail, 2010). This shift jeopardised the nation's economic activities and also aggravated its level of unemployment.

The mono-economic practice has led to incessant neglect of other sectors of the economy such as agriculture, tourism, mining and the manufacturing industry, thus leading to capacity under-utilisation, widespread poverty, low standard of living at individual levels and rising unemployment. As reported by the World Bank Development Indicators (2014), majority of Nigerians are poor with 84.5% of the population living on less than two dollars per day. The United Nations Human Development Index (2014) also ranked Nigeria as number 152 on the list of 187 poorest nations of the World. This can be traced to mono-economic practice and under-utilisation of the nation's resources, especially in the manufacturing sector (Akinmulegun and Oluwole, 2013).

The history of the Nigerian manufacturing industry has been gloomy. Despite the efforts of successive governments to revamp the sector, its contribution to the nation's Gross Domestic Product (GDP) remains minuscule (Central Bank of Nigeria, CBN, 2013). Prior to the oil boom of the 1970's, manufacturing contributed approximately 10% to Nigeria's economic output. Thereafter, increased revenues from oil caused the sector's relative Gross Domestic Product (GDP) share to decline; growth persisted albeit at a slower rate (National Bureau of Statistics, 2015).

The recession caused by the fall in oil prices in the early 1980's triggered policy attention to turn back to the manufacturing sector, with steel production gaining prime focus. Prior to this, the Nigerian Enterprises Promotion Decrees of 1972 and 1977 had switched the majority firm ownership from foreign to Nigerian, restricting foreign capital inflows. The lack of affordability of imported goods, combined with the absence of foreign capital and technology, encouraged domestic production of basic commodities such as soap and salt.

Alongside, price manipulation through export and import subsidies encouraged the importation of intermediary inputs and thus the expansion of assembly based industry. A brief spike in manufacturing output was observed in the early 1980's (See Fig 1) so that it contributed to 7.83% of total economic output. However, the price manipulation discouraged domestic manufacture of inputs, as well as the investment in the infrastructure and human capital required to do so in the future and this share soon began to decline.

In 1987 import bans on raw materials were imposed under the World Bank Structural Adjustment Programmes (SAPs), encouraging import substitution. Intermediary input manufacturers were able to produce competitively again, and there were fewer plant closures. This, combined with the Privatisation and Commercialisation Act of 1988, encouraged a higher degree of efficiency to be achieved in manufacturing. A slight increase in the share of manufacturing in economic output of 0.62% points was observed from 1986-1988.

Throughout the 1990s and 2000's, Nigeria continued to rely heavily on the export of oil, allowing manufacture to remain in decline. Firms were not export orientated, and lacked efficiency, causing competitive companies to relocate factories abroad. A few key industries, such as beverages, textiles, cement and tobacco kept the sector afloat, but even these operated at under half of their capacity. To this day, production is mainly located in Lagos and its periphery, and to a lesser extent some other commercial towns such as Kano or Kaduna.

According to the NBS's (2015) Nigerian Manufacturing 2010-2012 Summary report, total manufacturing output in the formal sector in Nigeria was N6,845,678.59 million in 2010. It increased over the following two years, by N1,326,277.80 million or 19.37% in 2011 to reach N8,171,906.39 million and by N1,652,610.80 million or 20.22% in 2012 to reach a total of N9,824,517.19 million.

In all three years, the formal manufacturing sector was dominated by output from the Food Beverages and Tobacco Activity, with N4,930,494.55 million or 72.02% of output contributed in 2010. Despite the activity's growth of N488,855.06 million or 9.91% in 2011 and N712,759.35 million or 13.15% in 2012, this total output share declined to 66.32% and 62.42% in 2011 and 2012 respectively. The second largest contributor to manufacturing output was the Textile, Apparel and Footwear Activity, which at N792,693.12 million in 2010, represented 11.58% of

total output. With growth of N398,019.65 million or 50.21% in 2011, the total output of N1,190,712.77 million represented 14.57% of total output.

This share increased further in 2012, with output of N1,652,840.71 million representing 16.82% of the total, due to output growth of N462,127.94 million or 38.81%. Other Manufacturing and Non-Metallic Products were the third and fourth greatest contributors to manufacturing output, representing N392,317.00 million or 11.58% of the total and N187,709.52 million or 5.73% of the total in 2010. However, whilst non-metallic products' share remained relatively constant over the period, that held by Other Manufacturing increased. The year 2011 saw a rise of N183,354.36 million or 46.74%, increasing its share to 7.04% of the total for the sector. From this total value of N575,671.36 million, it increased by a further N210,716.46 million or 36.60% , reaching N786,387.82 million or 8.00% of the total. Basic Metals, Iron and Steel exhibited the fastest rate of growth over the period, increasing by N77,227.64 million or 77.03% in 2011, from the N100,262.47 million recorded in 2010 to N177,490.11 million in 2011.

When compared to strong manufacturing in other emerging economies such as Brazil, China, Malaysia, Thailand and Indonesia where structural change has occurred and millions lifted out of poverty as a result, the Nigeria does not seem to have any effective industrial policy that promotes manufacturing that will at least provide practical solutions to difficulties encountered by incipient entrepreneurs or emerging manufacturing firms. It is in the light of the foregoing that this study looks at how implementation of knowledge management practices can influence the performance of the manufacturing industry in Nigeria as it has been observed in some developed countries of the world.

2.7 Knowledge Management Practices and Organisational Performance

Perhaps the most significant gap in the literature is the lack of large-scale empirical evidence that KM makes a difference to organisational performance (Zack, McKeen and Singh, 2009). While survey research is beginning to appear in KM journals (e.g. Kalling, 2003; McCann and Buckner, 2004; Tanriverdi, 2005), the bulk is descriptive (Chauvel and Dupres, 2002). Of the few survey studies that examine relationships between KM and other factors (e.g. Moffet, McAdam and Parkinson, 2003) only a few articles empirically investigated the relationship between KM and organizational performance.

The assumption underlying the practice of KM is that by locating and sharing useful knowledge, organisational performance will improve (Davenport and Prusak, 1998). In reality, one might expect KM to influence many different aspects of organisational performance. For example, KM has been linked positively to financial performance measures (Tanriverdi, 2005) and non-financial performance measures such as quality (Mukherjee, Lupre and Wassenhove, 1998), innovation (Francisco and Guardamillas, 2002), and productivity (Lapre and Wassenhove, 2001).

Tanriverdi (2005) found a moderately weak relationship between a firm's financial performance and its ability to create, share, integrate, and use knowledge. Most of the recent surveys examining the performance impacts of KM have aggregated several different measures of impact or performance. Gold, Malhotra and Segars (2001) examined the contribution of "knowledge infrastructure" (information technology, organisation culture, and organisation structure) and knowledge processing capability (i.e. the ability to acquire, convert, apply and protect knowledge) on several dimensions of organisational effectiveness. They found a strong and significant relationship between both knowledge infrastructure and knowledge processing with organisational effectiveness, measured by using a broad set of non-financial outcomes (e.g. innovation, coordination, responsiveness, ability to identify market opportunities, speed to market, and process efficiency). They did not examine the relationship to financial performance.

However, Mohrman, Finegold and Mohrman (2003) extended the notion of organisational effectiveness to include financial measures. They surveyed ten companies and established a weak positive relationship between the extent to which the organizations created and exploited knowledge and overall organisational performance, including financial metrics. Similarly, Zack, McKain and Singh (2009) investigated the relationships among KM practices, intermediate and financial outcomes and the organisation's competitive environment. The results indicate that KM practices are positively associated with organisational performance as generally suggested by the KM literature, both qualitative (Davenport and Prusak, 1998; Massey, Montoya-Weiss and O'Driscoll, 2002; Nonaka, 1994) and quantitative (Choi and Lee, 2003; Schultz and Jobe, 2001; Simonin, 1997; Tanriverdi, 2005). More specifically, it was found that KM practices are directly related to various intermediate measures of strategic organisational performance (namely, customer intimacy, product leadership, and operational excellence), and that those intermediate

measures are, in turn, associated with financial performance. Based on this evidence, it was concluded that as long as KM practices enhance intermediate organisational performance, positive financial performance will result (Lee and Choi, 2003). Most of the remaining surveys identified in literature used a similar approach of aggregating financial and non-financial metrics to measure performance (e.g. Choi and Lee, 2003; Darroch and McNaughton, 2003; Lee and Choi, 2003; Marques and Simon, 2006; Sher and Lee, 2004).

Organisational performance is a construct that explains the success or failure of a firm over a period. Performance appraisal of corporate organisations is a means to assess the effectiveness of their decision making. Doing this, they are able to appraise the success or failure of their strategic planning. It has also been described by Tubigi and Alshawi (2015) as the mirror reflecting an organisation's ability to achieve high productivity, good market share, profitable financial refund and commendable social responsibilities towards the environment where it operates. According to Borman and Motowidlo (1993), organisational performance constitutes all behaviours related to organisational objectives depending on the contribution levels of individuals to the organisation. Brown and Laverick (1994) assert that the notion of corporate success derives from a company's performance, which is in turn a reflection of its decision making in relation to strategic objectives, markets and a whole range of internal and external circumstances.

Measuring organisational success is a continuous challenge for both managers and researchers (Maltz, Shenhar and Reilly, 2003) because it has been noted by Giovanni (2012) to vary from organisations to organisations depending on nature of business activities and set goals and objectives. Organisational performance can be measured using objective performance indicators such as profit per employee, return on sales and productivity per employee which is based Huselid's (1995) model. It can also be measured by using Delaney and Huselid's (1996) scale of perceptions of organisational performance (a subjective measure) which takes into account respondents' perceptions of their firm's performance relative to firms in similar business and product market competitors. However, Dess and Robinson (1984) has observed that obtaining accurate objective economic performance is often a problem particularly when studying business units of multi-industry firms and privately held firms. This is as a result of the fact that a company may release misleading figures

that may have been manipulated or massaged in such a way as to present a spurious reflection of the company's performance (Brown and Laverick, 1994).

Profit maximisation is viewed by many economists as the legitimate objective of all private organisations. However, economists and organisational theorists have argued that this may not be the correct measure of organisational performance because company objectives are not confined to profit maximisation (Brown and Laverick, 1994). For instance, Baumol's (1959) in Brown and Laverick (1994) suggested that the pursuit of size, measured by turnover, is more likely to serve the needs of management than profit maximisation. Similarly, Marris (1964) also in Brown and Laverick (1994), feels continuous growth, achieved by internal and external methods, may be the consideration of a firm over profit maximisation.

In order to address the inadequacy observed with financial and corporate objective measures of organisational performance, some academics such as Chakravarty (1986) have attempted to construct multi-factor functions of performance. This composite model satisfies the objectives of all stakeholders in a company such as the investor, employees, customers and the environment. Kaplan and Norton (1992) devised a composite measure of performance which they have called the "balanced scorecard". This includes financial measures and also operational measures such as customer satisfaction, use of information technology plus innovation and improvements to the company's activities. The scorecard provides a set of measures that give senior managers a fast single report on the organisation's performance. It allows managers an overview of the company from four perspectives, namely: customers' perspective; internal perspective; innovative and learning perspective; and financial perspective.

The balanced scorecard technique is essentially an internal measure of corporate performance which is what the present study aims to achieve. Because of the difficulty anticipated with collecting information on the financial performance of manufacturing companies due to the culture of organisational secrecy that is common with profit-oriented firms, the subjective approach to organisational performance measure is used for this study. This is premised on Dess and Robinson's (1984) assertion that, although subjective measures are interchangeable substitutes for objective performance measures, they are strongly correlated with objective measures of the absolute changes in return on assets and sales over the same period of time.

2.8 Theoretical Framework

The main thrust of this thesis is to investigate the relationship between KM practices and organisational performance in manufacturing companies in Nigeria. Theories from the information sciences and knowledge management literature were used as background for the formation of this study, namely Information Orientation, the organisational information environment and resource-based view of the firm.

The term Information Orientation (IO) was originally coined by Donald Marchand, William Kettinger and John Rollins in 2001 (Detlor, Ruhi, Turel, et al, 2006). It has been used to describe an organization's preparedness to use information for competitive advantage by virtue of its beliefs and values, and its information management and technology practices. It measures the extent to which business managers perceive their organizations to possess the capabilities associated with effective information use to improve business performance.

In their research, Marchand et al. (2001) provide empirical evidence to show that an organization's regard and appreciation of its information, and the ways information is used at personal and corporate levels, are critical to gaining and sustaining competitive advantage. They emphasize that information management is more than a matter of selecting and deploying various technologies and systems – it is a process which aims to provide the individuals involved in critical business processes, the right information at the right time for effective decision making. Furthermore, the right information may be structured and factual, or unstructured and narrative, and to utilize information to positively affect business performance, an organization needs to have the right mix of i) information technology practices, ii) information management practices, and iii) information behaviors and values.

Information technology practices (ITP) refer to the capability of a company to effectively manage its technology infrastructure in support of operational decision-making and communication processes. Effectual ITP oblige managers to link the overall corporate strategy to IT strategy in order to provide distinctive competencies that support innovation and management decision needs.

Information management practices (IMP) pertain to an organisation's capability to manage information effectively over its life cycle, including sensing, collecting, organising, processing and maintaining information. In this regard, effective IMP allow business managers to explicitly set up processes, train employees, and take personal responsibility for the management of information in order to reduce

information overload, improve the quality of information available to stakeholders, and enhance the decision-making capability of the organization. Information behaviours and values (IBV) symbolise an organisation's capability to instill and promote behaviors and values in its people for the effective use of information. For this, managers need to encourage integrity, formality, control, transparency, and sharing, while promoting proactive information use in their companies and removing barriers to information flow.

Together, the three components of ITP, IMP, and IBV provide an effective basis for information use within organisations. Marchand et al. (2001) expound the need for strong linkages between these three components by referring to the information management process as a recursive spiral. On the one hand, good information usage behaviors and values drive better information definition and management within the firm, and on the other hand, better information practices improve the organization's overall capability to use technology to support decision making and problem solving. The successful cycle in turn reinforces better information usage behaviors and values.

The Information Orientation model shares many similarities with the idea of organisational information environments. According to Detlor (2004) in Detlor et al (2006) a firm's information environment comprises several entities. The first is information culture, which refers to the degree to which information is readily shared, valued, and filtered across the company. The second are information systems development processes, which are the procedures in place in a firm, which dictate how information systems are developed and maintained. The third is information politics, which refers to the human struggle over the management of information. Moreover, Detlor points out how a firm's information environment – in terms of its information culture, systems development processes and politics – constrain and shape the degree to which people in organisations can access, create, share, find, browse, create and use information. That is, an organisation's information environment has a direct effect on both employee and organisational information behavior. Not only does Detlor provide theoretical justification for this, he also provides empirical evidence of the effect of the organisational information environment on information behavior based on his and other scholars' case study investigations. For example, a lack of information sharing, a high degree of information overload, or the existence of strong controls over the dissemination and

distribution of information in the firm, has been shown to deter or hamper knowledge work in organisations at both personal and corporate levels.

The assumption underlining the study is that KM practices in terms of appropriate mix of KM approaches, processes and enabling environment would have positive effect on the organisational performance of a firm which would lead to advantage over competitors. This assumption is premised on the resource-based view of the firm proposed by Wernerfelt (1984). A resource-based view of a firm explains the ability of the firm to deliver sustainable competitive advantage when resources are managed such that their outcomes cannot be imitated by competitors, which ultimately create a competitive barrier (Mahoney & Pandian, 1992).

Resource-based view explains that a firm's sustainable competitive advantage is reached by virtue of unique resources being rare, valuable, inimitable, and non-substitutable, as well as firm-specific (Barney, 1991; Makadok, 2001). The theory proposes that a firm may reach a sustainable competitive advantage through unique resources which it holds, and these resources cannot be easily bought, transferred, or copied, and simultaneously, they add value to a firm while being rare.

According to Wernerfert (1984), a resource means anything which could be thought of as strength or weakness of a given firm. Caves (1980) defines a firm's resources, more formally, as those tangible and intangible assets which are tied semi-permanently to the firm. Examples of such resources are: brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc. (Wernerfelt, 1984).

Knowledge has been claimed to be the main distinguishing factor of business success and competitive advantage (Carlucci and Schiuma, 2006; Pan and Scarborough, 1999). If knowledge is deemed to be the most important resource of organisations, then clearly, the need to secure that resource must be of primary concern and it demands good management. Therefore, extending the traditional notion of organisational resource-based capability to a firm's knowledge function suggests that the ability of a firm to adopt appropriate strategies and processes to manage its unique knowledge resources would impact organisational performance.

2.9 Conceptual Model

According to Davenport and Prusak (1998), the assumption underlying KM practice is that by locating and sharing useful knowledge, organisational performance

will improve. Therefore, the conceptual model for this study proposes that KM practices will be positively associated with organisational performance. This proposal is presented in the conceptual model presented in Figure 2.1.

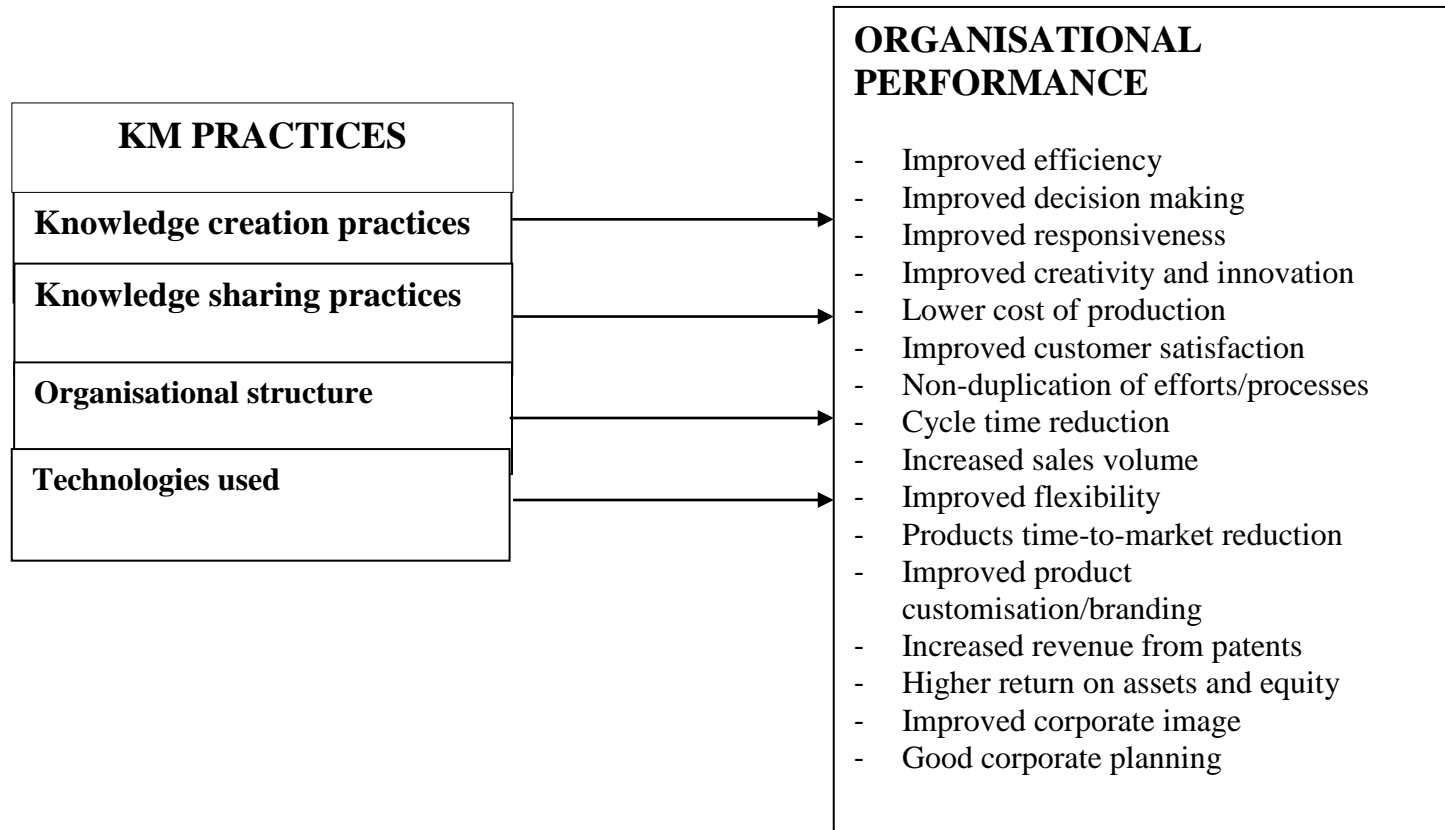


Figure 2.1: Conceptual Model developed by the Researcher

Based on the understanding of the relationship between resources, capabilities and organisational performance the conceptual model in Figure 2.1 above proposes that knowledge management capabilities of the manufacturing industry theorised as KM practices will lead to improved financial and/or non-financial outcomes operationalised as organisational performance. KM practices is conceptualised as a composite construct including two main KM processes and three factors that are critical to the successful implementation of KM in an organisation. The two KM processes are knowledge creation and knowledge sharing; while the critical success factors are organisational culture, structure, technology infrastructure.

Knowledge creation process is operationalised as activities, procedures, processes and strategies that are related to the generation, collection, processing and storage of ideas, information, data and knowledge engaged in by an organisation. Similarly, knowledge sharing is operationalised as the whole gamut of activities, behaviours, practices and procedures that are related to the sharing and transfer of ideas, information, data and knowledge within an organisation. Organisational structure includes the culture, behaviours, relationships, rewards and incentives that are put in place to facilitate collaboration and sharing in an organisation. Technology infrastructure includes ICT tools and technologies deployed in an organisation to support collaboration and knowledge management practices. Organisational performance is a construct measured by how the operators of the manufacturing industry perceive their firms' performance relative to that of similar organisations and product market competitors.

2.10 Appraisal of the Literature Reviewed

Reviewed literature revealed that having realised that knowledge is a source of competitive advantage organisations of various sizes and statuses invest in knowledge management initiatives to improve their effectiveness and success. However, no such efforts have been reported about any organisation in Nigeria and this is a gap this study has filled. Although there is no consensus definition for knowledge management as observed in the literature, the general belief is that KM is concerned with the exploitation and development of the knowledge assets of an organisation with the view to furthering the objectives of that organisation. This study finds out if manufacturing companies in Nigeria hold the same view about their knowledge assets.

The review shows that a little attention had been given to research on the implementation of KM in manufacturing and that there is a dearth of empirical studies on the relationship between KM practices and organisational performance. These gaps are filled by this study by adopting the information orientation theory and the resource-based view of the firm.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses how the study was carried out. It explains the research design of the study, the population of the study, the procedure for selecting sample for the study and the sample size. It also describes the research instruments for the study and explains how they were developed and validated. Finally, the chapter describes the data collection procedures, duration of execution and how the collected data were analysed.

3.2 Research Design

This study adopted a survey research design. This design was used because it is an efficient way of gathering data to answer research questions. The research design was used by previous researchers such as Zack, McKeen and Singh (2009) and Ahmed, Fiaz and Shoiab (2015) who conducted related studies.

3.3 Location and Population of the Study

The population of the study comprised the 84 manufacturing companies quoted on the Nigerian Stock Exchange (NSE) and their top management personnel. Appendix IV shows the quoted companies and their respective sectors. However, only the manufacturing firms that were functional and located in South-west states of Nigeria namely Lagos, Ogun, Ondo, Osun and Oyo with their top management personnel formed the study population. The southwestern states were studied because majority of the NSE listed manufacturing firms have their main plants located in the region particularly in Lagos and Ogun states.

The top management personnel of the companies were the direct subjects of the study. These are the individuals considered as being most influential in the strategic decision-making process in a firm. Such strategic decisions were defined as

those having significant impact on the future state of the firm and/or those that could lead to commitment of large amounts of organisational resources of a firm to specific projects. They included chief executive officers, managing directors, commercial or marketing managers, research and development (R&D) managers, quality control managers, human resources managers and information systems managers working in the manufacturing companies listed in the NSE. The top management personnel were targeted because they were considered to be knowledgeable about the goals and missions as well as the competitive priorities of their organisations.

3.4 Sample Size and Sampling Technique

The sample of this study comprised the functional manufacturing companies located in southwest states (Lagos, Ogun, Osun and Oyo States) of Nigeria. Due to the heterogeneous nature of the finished products in the manufacturing companies, a multi-stage sampling technique was used to determine the sample size of the Study. According to Battaglia (2011), multi-stage sampling refers to sampling plans in which sampling is carried out in stages using smaller units of the population at each stage. The first stage was the purposive selection of 60 manufacturing companies located in Lagos, Ogun, Oyo and Osun States that are listed in the Nigerian Stock Exchange (NSE). The companies are listed in Appendix V. Purposive sampling technique was adopted in order to ensure a maximum presence of the variability of the companies.

In the second stage of the sampling procedure, 37 companies were selected using the stratified sampling technique. This technique was preferred because of the heterogeneous nature of the products of the manufacturing industry. Stratified sampling guarantees greater precision of the sample and ensures sufficient sample points to support separate analysis of the subgroups. The 37 companies were selected using proportionate sample fraction of 60% for each sector of the manufacturing industry to ensure sufficient representation of all strata (Hammed and Popoola, 2006). Table 3.1 shows the selected companies according to sector.

The last stage was the selection of the actual participants of the study. The total enumeration sampling technique was used to achieve this because only the top management personnel of the sampled companies were involved in the survey and these were less than 10 in the companies. They included chief executive officers, managing directors, commercial or marketing managers, research and development (R&D) managers, quality control managers, human resources managers, information

systems managers; which are the core operational units of the companies. The individuals occupying these positions as at the time of this study formed the actual participants in the research. In all, they were 259 in number (7 from each company).

Table 3.1: The Manufacturing Companies Selected for the Study

Serial Number	Product type	Population size	Sample size	Name of the selected companies
1	Agriculture & Agro Allied Companies	1	1	Livestock Feeds PLC
2	Breweries	3	2	International Breweries PLC
3				Nigerian Breweries PLC
4	Building materials	6	4	Dangote Cement PLC
5				Lafarge WAPCO PLC
6				Nigerian Wire Industries
7				Nigerian Wire & Cable PLC
8	Computer and Office equipment/Educational materials	4	2	University Press PLC
9				Academy Press PLC
10	Conglomerates	8	5	AG Leventis PLC
11				PZ Cusson PLC
12				UAC Nigeria PLC
13				UTC Nigeria PLC
14				UNILEVER Nigeria PLC
15	Food/Beverages and Tobacco	16	10	7 Up Bottling Company PLC
16				Cadbury PLC
17				Dangote Sugar Refinery
18				Dangote Flour Mills PLC
19				Flour Mills PLC
20				Honeywell Flour Mill PLC
21				Multi-Trex Integrated Foods PLC
22				Nestle Nigeria PLC
23				Tantalizers PLC
24				Rokana Industries PLC
25	Healthcare	10	6	Fidson Healthcare PLC
26				GSK Nigeria PLC
27				Neimeth International Pharmaceutical PLC
28				Nigera-German Chemicals PLC
29				Pharma-Deko PLC
30				Evans Medical PLC
31	Industrial/Domestic Products	7	4	First Aluminium Nigeria PLC
32				Vitafoam Nigeria PLC
33				Vono Products PLC
34				DN Tyre & Rubber PLC
35	Packaging	5	3	ABPLAST Products PLC
36				Avon Crowncaps & Containers PLC
37				Nigerian Bag Manufacturing Company PLC
	Total	60	37	

3.5 Research Instrument

The major instruments for data collection were questionnaire and interview. However, these were supported by content analysis of official publications of the organisations sampled for the study. For the interview, a schedule was prepared in order to extract information about the demographic characteristics of the companies as regards their age, workforce, turnover, sales volume, etc.; to gauge the status of knowledge management (KM) practices and also to validate the findings of the questionnaire. The interview schedule was adapted from Moollan's (2004) framework for assessing KM in water services industry (see Appendix I).

The questionnaire was structured into two sections. Section A contained items that elicited information about the demographic characteristics of individual participants and their organisations. Section B was made up of two constructs namely Knowledge Management Practices Assessment (KMPA) and Manufacturing Industry Performance Scale (MIPAS). KMPA was designed to obtain information about KM practices in the manufacturing industry. The instrument was adapted from Moollan's (2004) framework for the assessment of KM practices in the Water Services Directorate of the City of Cape Town. There were 60 items in the Moollan's instrument. However, seven items that measured awareness of KM were left out since that was not part of the objectives of the present study. The remaining 53 items were re-grouped under: Knowledge Creation Practices Scale (KCPS), Knowledge Sharing Practices Scale (KSPS), Organisational Structure Assessment Scale (OSAS), Technology Infrastructure Assessment Scale (TIAS).

Seven items were grouped under activities, behaviours, processes and procedures of knowledge creation practices in the manufacturing industry. It was code-named KCPS. Twenty items were grouped under KSPS to elicit the views of the respondents on activities, behaviours, culture, procedures and processes of knowledge sharing practices in the manufacturing industry. Similarly, 18 items were clustered under OSAS to find out participants' views about the organisational structures in their workplaces in terms of arrangement, policies, relationships, information flow, incentivisation and other matters to gauge the suitability of the manufacturing industry environment for KM practices. Likewise, 7 items, code-named TIAS, were selected from the adapted instrument to assess the supportiveness of the technology infrastructure in the manufacturing firms to KM activities and practices.

KMPA was adopted because it was used in an African industry by Moollan (2004), therefore, it must have been domesticated to suit the African context. The instrument was measured on a 5-point Likert type scale (1= strongly disagree to 5= strongly agree). The mean score of the respondents was converted to generate the existing level of KM practices (where 1=very low, 2= low, 3= moderate, 4= high and 5= very high) in the manufacturing industry. The instrument can be found in Appendix B.

MIPAS was also a multi-item instrument to measure organisational performance in the manufacturing industry. MIPAS has 16 items as adopted from Popoola (2011). The scale comprised a range of performance indicators including profitability, growth rate of revenues, customer satisfaction, employee's productivity, and goodwill of the company and product quality. It is based on respondents' perception of their companies' performance compared to competitors on a 6-point Likert type scale (from 1= very poor to 6= excellent). The respondents' mean score is considered as the performance of the organisation. Similar scales had been used and found acceptable in KM versus organisational performance research by Gold et al (2001) and Zack et al (2009).

A checklist of words and phrases often used to describe knowledge management and its practices were identified and listed to guide the content analysis of documents emanating from the companies under the study. Such words and phrases included knowledge management, knowledge creation, knowledge sharing, knowledge transfer, expert systems, intellectual capital, intellectual property, organisational learning, communities of practice, etc. The presence of these words/phrases showed that the companies were aware of knowledge management and might be practicing it as an organisational strategy. Moreover, the content analysis also assisted to obtain primary data about the profiles of the companies that participated in the study.

3.6 Validity and Reliability of the Instruments

Based on the literature reviewed, existing constructs and theories were elicited and this formed the foundation upon which the instruments were designed. In order to validate the instruments thesis' Supervisor and other lecturers in the Department of Library, Archival and Information Studies, University of Ibadan vetted and

scrutinised their contents and contexts to ensure they met and complied with the standard required for studies of this nature.

Internal consistency of the instruments was determined by using the Cronbach Alpha Reliability test by pretesting them on 20 managers in two manufacturing firms in Lagos. All the constructs had Reliability coefficients, $\alpha > 0.7$ cutoff ranging from 0.83 to 0.97. Relatively high values of reliability and validity implied that the instruments used in this study were adequate. The result of the reliability test is presented in Table 3.2.

Table 3.2: Cronbach Alpha Values showing Reliability of the Used Scales

Code of scale	Number of items	Cronbach Alpha (α) value
KCPS	7	0.83
KSPS	20	0.93
OSAS	18	0.94
TIAS	8	0.87
MIPAS	16	0.97

3.7 Data Collection Procedure

A covering letter introducing the researcher to the companies selected for the study as a doctoral research student was collected from the Department of Library Archival and Information Studies. This was to ensure proper identification of the candidate, favourable response from the participants and also to build their confidence to volunteer information without reservations. The letter of introduction accompanied with copies of the questionnaire were delivered to the corporate addresses of the companies obtained from their official websites or the Nigerian Stock Exchange websites and printed business directories by a research assistant engaged and trained by the researcher.

Thereafter, the researcher visited the companies as a follow-up to ensure that the instruments were delivered. It was also meant to collect the completed questionnaires and to administer fresh ones in companies that might not have received the earlier copies of the questionnaire. This was aimed at improving return of the questionnaires. Furthermore, interviews were conducted for chief executives/ managing directors or designated officers of the companies based on the interview schedule in Appendix A. Each interview lasted 15 minutes and was tape-recorded and later transcribed for analysis.

In order to confirm the information collected through interviews, content analyses of some official records of the companies such as websites, annual reports, and plant magazines were made. These documents were perused to detect if knowledge management was a vocabulary of the organisations. The documents were also consulted in order to have primary information about the profiles of the companies.

Out of the 259 questionnaires issued to the participants, 182 (70.27%) were completed and returned. A major challenge of the data collection was that many of the companies had strict policies against questionnaire research. In such places, the researcher was disallowed to enter the premises to administer the questionnaire or conduct interview. Even when the instruments were received with acknowledgement, some companies either returned them by post unattended to with covering letters or telephone calls to explain why they refused to complete the questionnaire. Such explanations were always premised on organisational policies that prohibited employees' participation in surveys and communication with outsiders.

Inadequate knowledge of the structure of the organisations studied in terms of roles and hierarchies also contributed to the low response, because it was difficult to identify the right persons to respond to the questionnaires in some of the firms. In most cases the surveys were delivered at human resources department of the organisations hence, it was difficult to determine if the actual respondents had the necessary knowledge or information required to complete the questionnaires. This could have also introduced errors to the data collected from the survey.

Nevertheless, the responses was adjudged adequate because a similar study in India had only 16 manufacturing companies participating out of the 100 contacted with only 57 respondents (Chawla and Joshi, 2010). Likewise, Singh et al (2006) reported that only 71 questionnaires were found to be useful out of the 625 mailed to top management officials in a survey of knowledge management practices in the Indian manufacturing industry. Since India and Nigeria share similar economic and cultural realities, attitudes to organisational research in the two countries might not be different.

3.8 Data Analysis

The data collected were analysed using both descriptive and inferential statistics. The questionnaire-based data were coded and analysed using Statistical

Package for Social Scientists (SPSS). Descriptive statistics tools such as frequency tables, means and standard deviations were used to describe the demographic characteristics of the subjects and to analyse the research questions; while inferential statistics including Pearson Moment Correlation and multiple regression were employed to test the hypotheses.

Similarly, data collected through interviews were transcribed and similar responses to similar questions were aggregated and reported accordingly. Also, contents of company literature such as annual reports, websites, plant magazines, promo documents, and other publications of the companies were perused in-depth. The aim was to find out if there was any mention of knowledge management or related phrases in the vocabularies of the organisations. Related words and phrases were grouped together as found in the documents and checked against a list KM-related words or phrases.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the findings of the study. The results are presented based on the objectives, research questions and hypotheses of the research. Tables, charts and other descriptive and inferential statistics are used to present the findings of the study.

4.2 Characteristics of the Respondents

Although the unit of analysis for this study was the organisation, it is pertinent to articulate the characteristics of the respondents of the study. As shown in Figure 4.1, about 37% of the respondents were within the age bracket 36-45 years; while only 5 (2.8%) were 55 years and above. The distribution showed that the manufacturing industry in Nigeria has a relatively young workforce at the executive level with over 97% within 25-55 years age bracket.

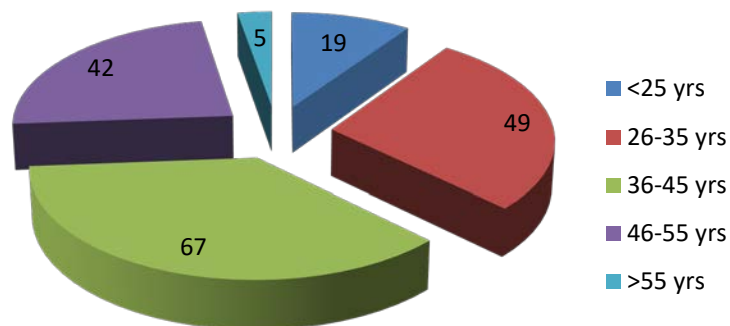


Figure 4.1: Age Distribution of the Respondents

In terms of academic qualifications, over 80% of the respondents had postgraduate degrees and either higher national diploma or bachelor degrees as shown in Table 4.1. This indicated that the managers were well educated as every respondent had at least a diploma certificate and above.

Moreover, about 91% of the respondents had spent 3 years or more in their respective companies as shown in Table 4.2. Therefore, they were considered eligible to respond to the survey because they would understand the workings of their organisations. When asked if they had worked somewhere else before joining their present companies, over 64% were affirmative while about 22% declined answers to the query.

Table 4.1: Academic Qualifications of the Respondents

Academic qualifications	N	Number of respondents	Percent response
Diploma	182	8	4.2%
HND/Bachelor degree		70	38.7%
Postgraduate degree		77	42.3%
Professional certificate		12	6.3%
Other		15	8.5%

Table 4.2: Respondents' Years of Working Experience in Present Company

Years of experience in present company	N	Number of respondents	Percent response
<3 years	182	60	33.0%
4-10 years		58	31.7%
11-15 years		46	25.5%
>15 years		18	9.8%

The respondents were requested to indicate the sector of the manufacturing industry their companies belonged to. There were more respondents from the food and beverage sector than others as shown in Figure 4.2.

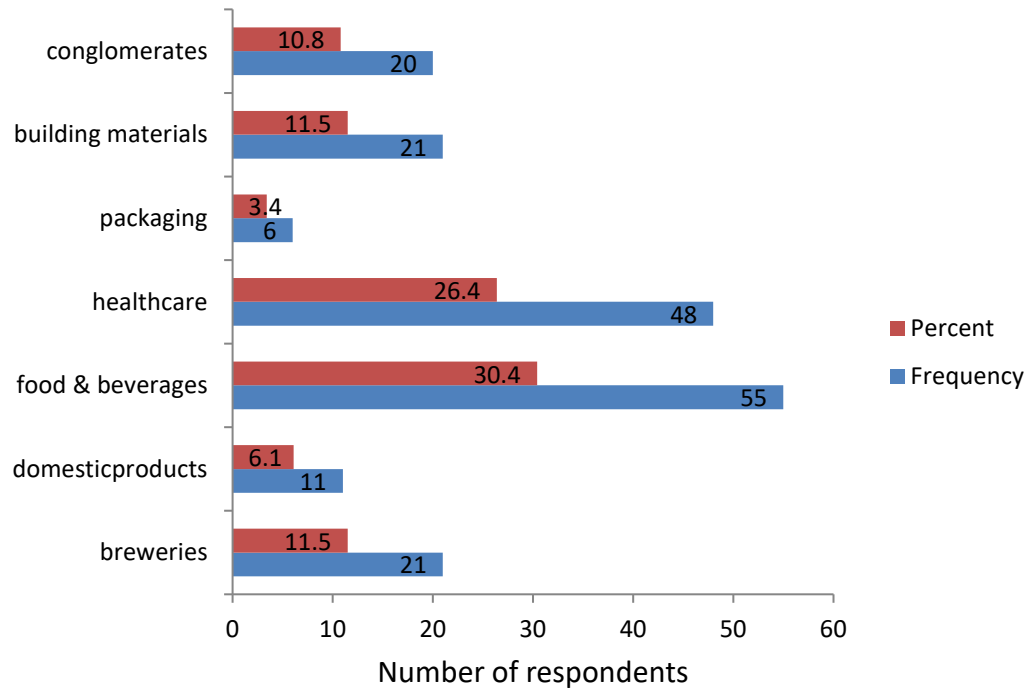


Figure 4.2: Distribution of the Respondents by Manufacturing Sectors

4.3 Profiles of the Companies

The data provided in this section were obtained from the interviews conducted for the chief executive officers of the companies or their designates and content analysis of their official publications including websites, annual reports, plant magazines and other relevant documents about the companies. As shown in Figure 4.3, sixty percent of the companies were above 50 years old in operation and there was none less than 10 years old. Also, Figure 4.4 also presented the workforce of the companies according to the type of manufacturing industry the companies belonged to. More than half of the companies were large organisations that have more than 1000 employees.

Table 4.3 presents the average annual sales turnover of the companies under investigation. About sixty percent of the companies posted between 10 and 50 billion Naira as average turnover while about 22% posted more than 100 billion Naira; and these were mainly subsidiaries of multinational companies whose headquarters were located outside Nigeria.

Table 4.3: Average Annual Turnover of the Manufacturing Companies

Sales turnover ('billion Naira)	Number of companies (N=26)	Percent
<= 10	7	26
11-50	7	26
51-100	4	17
>100	6	22
No response	2	9
Total	26	100

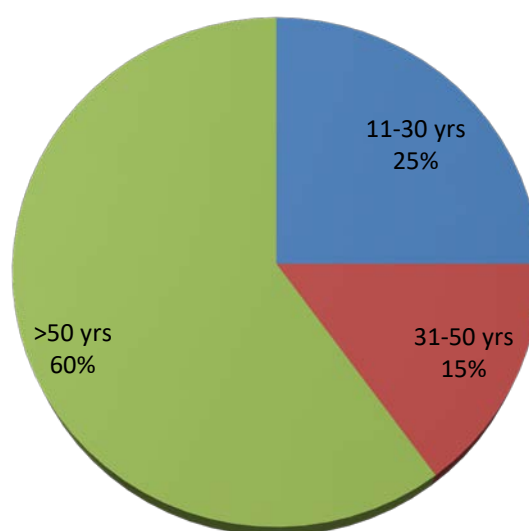


Figure 4.3: Age of the Manufacturing Companies

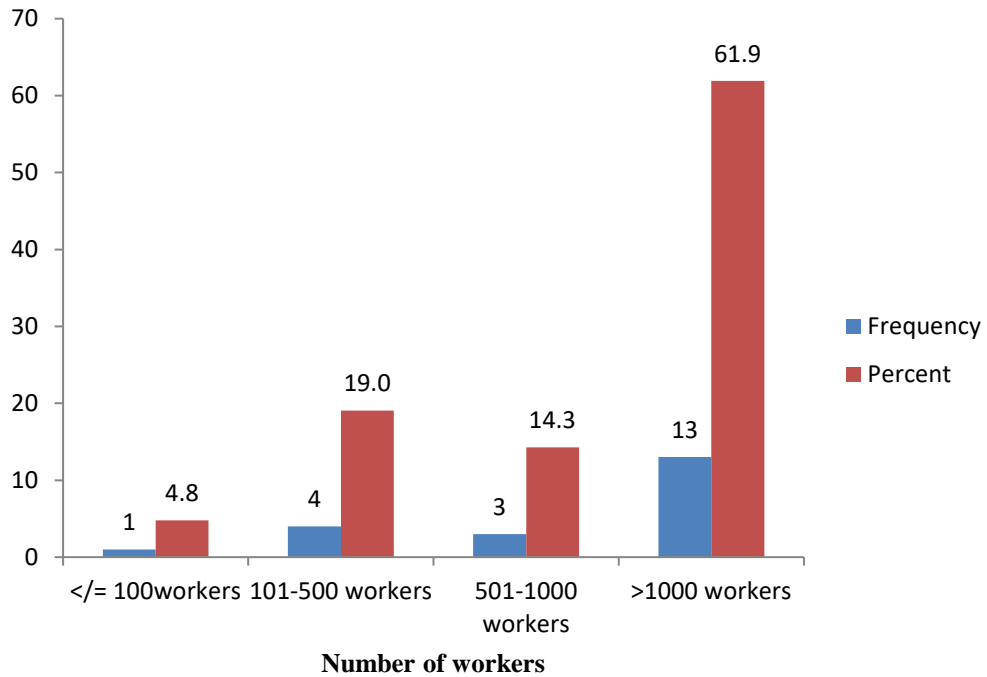


Figure 4.4: Number of Workers in the Manufacturing Industry

4.4 Answers to the Research Questions

Research Question 1: What does the manufacturing industry consider as priorities in its operations to gain edge over competitors?

Table 4.4 highlights the competitive priorities of the companies studied. This was obtained from a content analysis of their official publications including websites, annual reports, newsletters and plant magazines. The data were obtained from the philosophy, vision, mission and value statements of the companies. These priorities were of concern to this study because they were believed to be central to all efforts made by the organisations towards achieving an edge over their competitors and they revolved around quality, cost reduction, improvement in efficiency, improved delivery, and environmental protection. Other priorities included flexibility in solving problems, customer satisfaction and innovation.

As shown in the table, about 70% of the companies were committed to quality and customer satisfaction as competitive priorities while 52% were committed to innovative product development. The other indices of competitive priorities were not mentioned by majority of the companies.

Table 4.4: Competitive Priorities of the Companies

Priorities	Number of Companies	Percent
Quality	18	71%
Customer satisfaction	18	70%
Innovation	14	52%
Environmental protection	5	19%
Improvement in efficiency	5	19%
Cost reduction	3	9.5%

Research Question 2: How important is knowledge to success in the manufacturing industry in Nigeria?

When asked how important they considered knowledge, either in documented (explicit) or undocumented format, majority of the interviewees (95%) believed that knowledge is very important to the success of their companies. Many of the respondents claimed that knowledge played very critical roles in decisions that are concerned with improvement in efficiency, reduction of production cost and customer satisfaction. Some of the respondents said that members of staff are often sent on training to acquire knowledge about new ideas and technologies which they are not available in their companies. The purpose of this is to ensure continuous improvements of their products and services in order to gain competitive advantage in the industry.

Research Question 3: What types of knowledge are critical in the manufacturing industry in Nigeria?

In order to appreciate how knowledge was being managed in the manufacturing industry in Nigeria, it was important to identify the different types of knowledge that the companies considered critical to the success of their operations. The interviewees were asked to indicate these on a checklist of knowledge types identified by Singh et al (2006) to be critical to the success of manufacturing outfits in India including: knowledge about feedback from customers; core competencies of employees; raw materials and products; trends and development in the industry; best

practices in the sector; and competitors’ performance. Their responses revealed that all the types of knowledge were considered to be critical to the success of the companies as shown in Figure 4.5.

Although the order of priority of these knowledge types was not the interest of this study, it is pertinent to note that feedback from customers, information about raw materials and products, and knowledge about competitors’ performance ranked highest in the considerations of the companies. This implied that they paid high premium on these types of knowledge and it was assumed that they would do more to gather, process and safeguard them.

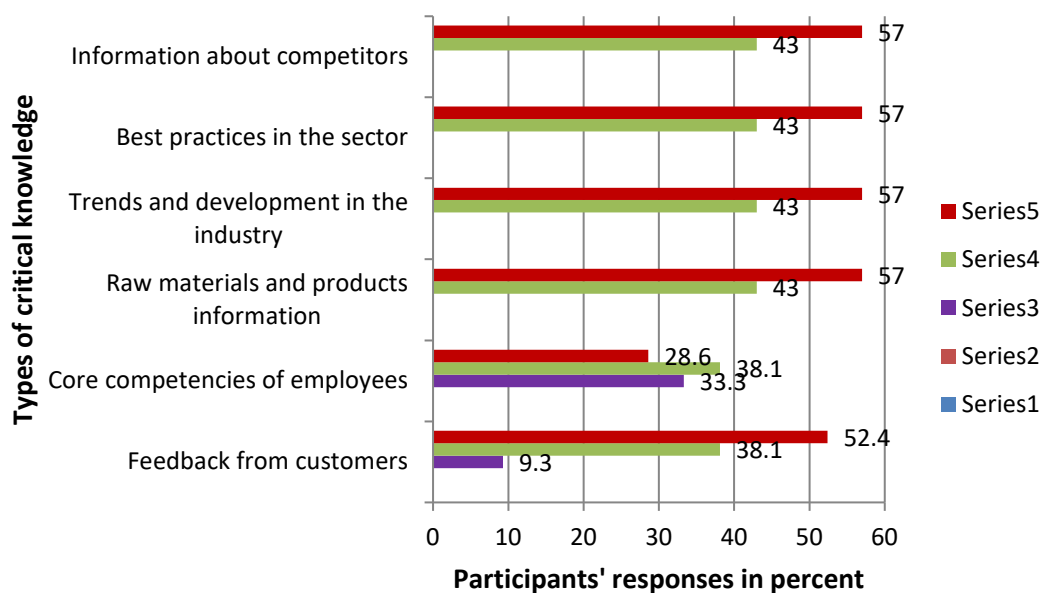


Figure 4.5: Types of critical knowledge in the manufacturing industry

Research Question 4: What is the status of knowledge management in the manufacturing industry in Nigeria?

The interviewees were asked if they have heard about knowledge management either as a concept or practice before the study. Their responses revealed that they were oblivious of the concept because about 95% said ‘no’ to the question. Also, an in-depth perusal of the official publications of the companies revealed no mention of the term “knowledge management” or its derivatives such as ‘communities of practice’, “intellectual capital management”, “knowledge sharing”, “knowledge creation”, etc in their official vocabularies. The implication of this could be that: although KM was not well-known to the manufacturing industry to the level of being in regular usage in their lexicon, it was nevertheless practiced but not institutionalised.

When they were asked to confirm if there were mechanisms in place in their organisations for identifying knowledge and expertise of employees, analysing available and required information, planning and controlling actions to develop knowledge assets, and coordinating people, process, technology and organisational structure, many of the interviewees answered in the affirmative. Similarly, many of the interviewees claimed that their companies engaged in certain activities that could be described as knowledge management practices which include: staff training and development, connecting people both inside and outside the company, regular in-house seminars, professional development, benchmarking best practices, discussion of major projects, locating skills and expertise within and outside the company, promoting teamwork and involvement, hiring and training new staff, records management, and buying and keeping books.

Furthermore, majority of the interviewees said their companies did not have in place any formal knowledge management programmes neither did they appoint dedicated officers who have responsibilities for managing their knowledge assets and coordinating their KM activities. They also said that there were no clear cut policies specific to KM and no special budgets for its implementation in the companies. It could therefore be concluded from the foregoing that KM was still at the embryonic stage in the manufacturing industry in Nigeria and many organisations practiced it informally.

Research Question 5: What are the knowledge creation practices in the manufacturing industry in Nigeria?

The respondents were asked to indicate their degree of agreement to the statements concerned with activities, procedures and processes of knowledge creation in the knowledge creation practices scale (KCPS) in order to ascertain if such practices were implemented in their organisations. Their response pattern is presented in Table 4.5 in descending order of mean scores. Apparently from their responses, the participants believed that there were activities and procedures relating to knowledge creation practices in the manufacturing industry to a moderate extent, although there were no formal structures for knowledge management and the respondents might not have been aware that they were performing KM related tasks. Item KCPS1 was about the most implemented knowledge creation practice identified by the respondents as

more than 87% strongly agreed and agreed to the statement. This implied that training on new systems that focused on how the technologies can be used to improve the quality and efficiency of how people work was a more popular practice than other activities and procedures. However, less than 50% of the respondents believed that their organisations apprentice their people to other companies to determine if they needed to acquire new skills or expertise. This means that this was not a common practice in the organisations.

Figure 4.6 shows the mean responses to the statements describing knowledge creation related activities, procedures and processes by type of the industry. The brewing industry had a higher mean score than the other types of the manufacturing industry and this implied that, statistically speaking, the brewing industry engaged in more knowledge creation related activities or procedures than others, though informally.

Table 4.5: Knowledge Creation Practices in the Manufacturing Industry in Nigeria

Knowledge creation practices	Mean	SD	Agree	Disagree
KCPS1: Training on new systems focuses on how these technologies can be used to improve the quality and efficiency of how people work.	4.20	.86	87.1%	4.7%
KCPS3: Experts play a role in identifying important information for other users	3.94	.91	74.2%	8.4%
KCPS7: We outsource skills and expertise that do not support our core competencies.	3.73	1.10	64.8%	13.4%
KCPS4: Teams engage in off-site learning experiences to find better ways of working together.	3.71	.97	69.2%	11.9%
KCPS2: Specific individuals identify, collect, classify, summarise and disseminate organisational knowledge.	3.69	1.11	64.3%	14.3%
KCPS6: We form alliances with organisations that complement our skills sets as an alternative to doing everything ourselves.	3.68	1.05	66.9%	14.1%
KCPS5: We apprentice our people to other organisations to determine if we need to acquire new skills or expertise.	3.27	1.17	47.2%	26.1%

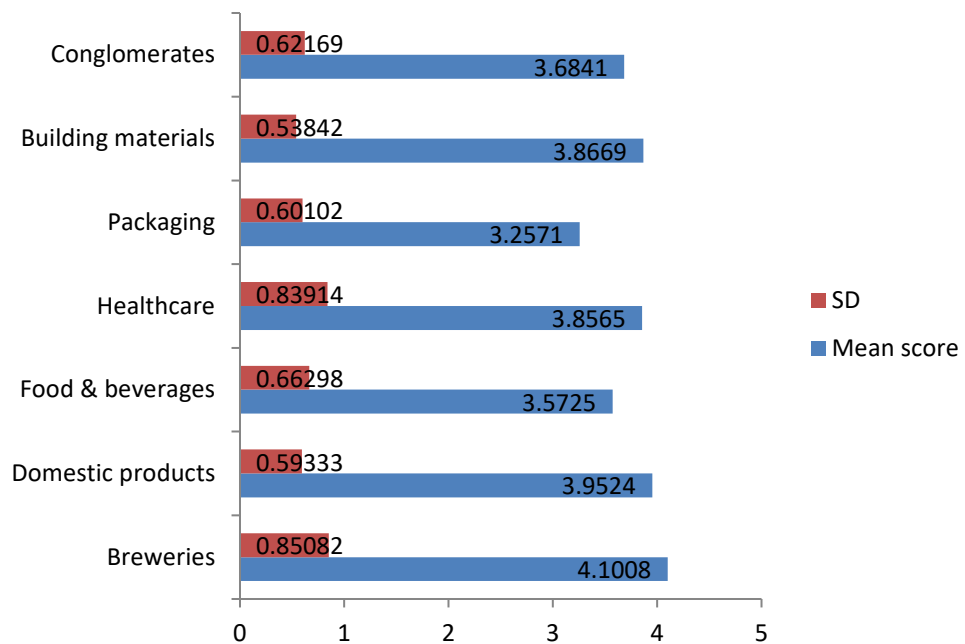


Figure 4.6: Knowledge Creation Practices according to Sectors of Manufacturing

Research Question 6: What are the knowledge sharing practices in the manufacturing industry in Nigeria?

In order to further understand the status of KM in the companies, the participants' opinion was sought on how much they agreed with the statements in knowledge sharing practices scale (KSPS) bordering on the existence of knowledge sharing culture, behaviours, processes, activities and practices in their organisations. The pattern of their responses to each item of the scale is presented in Table 4.6.

On the whole, knowledge sharing was fairly practiced in the manufacturing industry in Nigeria. Hierarchically, the mean scores indicated that the practice of items KSPS12, KSPS9 and KSPS10 was more common in the organisations (mean score > 4.00); while responses to other items of the scale were at moderate levels (mean score >3.00). Also, over 50% of the respondents agreed to all the statements to indicate that their organisations engaged in knowledge sharing practices.

Further analysis of the data revealed that knowledge sharing emphasis differed from one sector of the manufacturing industry to the other. Table 4.7 presents the three most- and the three least- implemented knowledge sharing practices in the companies according to product lines (based on mean scores of the responses).

Table 4.6: Knowledge Sharing Practices in the Manufacturing Industry

Knowledge sharing practices (N= 182)	Mean	SD	Agree	Disagree	Undecided
KSPS12: Our learning process often includes gathering feedback from customers.	4.09	0.88	78%	4.2%	17.7%
KSPS9: People apply what they learn outside the organisation to their work.	4.08	0.73	83.3%	2.1%	14.6%
KSPS10: Reflecting on lessons learned from work experiences is an established practice in our organisation.	4.05	0.75	84.6%	4.2%	11.2%
KSPS14: People apply the ideas they developed in past work situations to their current work.	3.99	0.86	83.1%	7.0%	9.9%
KSPS15: Our organisation supports group activities that promote mutual learning.	3.97	0.92	73.8%	6.9%	19.3%
KSPS24: We value the contribution of ideas of everyone in our organisation.	3.91	1.00	77.2%	8.0%	14.7%
KSPS11: When people finish projects, they generally take time to meet with their team and analyse what went wrong and what could have been done better.	3.90	0.87	74.5%	7.8%	17.7%
KSPS21: Our organisation looks for ways to remove barriers to knowledge sharing	3.89	0.88	77.5%	8.6%	13.8%
KSPS18: People in our organisation would say that sharing knowledge does not diminish the individual's value to the organisation.	3.89	0.91	71.4%	7.1%	21.4%
KSPS16: We treat disagreement as an opportunity to learn from one another	3.87	0.87	75.4%	4.9%	17.6%
KSPS8: Groups and individuals routinely share information about their expertise	3.83	0.93	71.1%	9.9%	19.9%
KSPS19: We link people across traditional organizational units and functional groups to promote knowledge sharing.	3.83	0.82	73.9%	6.5%	19.6%
KSPS26: We routinely ask ourselves how we can leverage our knowledge into other areas.	3.81	1.02	71.7%	13.0%	15.2%
KSPS27: Our managers include knowledge management in their business plans	3.74	1.06	68.0%	15.2%	16.8%
KSPS23: Most people speak up if they have an opinion or idea to offer.	3.74	0.97	70.6%	14.7%	14.7%
KSPS22: We treat information as an open resource that flows freely to all corners of our organisation.	3.70	1.00	62.8%	13.9%	23.4%
KSPS25: We often meet away from our offices in relaxed settings to discuss work-related issues.	3.66	1.16	68.1%	18.8%	13.0%
KSPS17: Dedicated roles, such as knowledge manager or knowledge co-coordinator, support the knowledge sharing process.	3.59	1.14	62.9%	16.5%	20.7%
KSPS20: Knowledge sharing behaviour is built into performance appraisal system.	3.57	1.13	55.8%	19.5%	24.6%
KSPS13: People admit when they fail	3.41	1.05	50.4%	21.9%	27.7%

Table 4.7: Knowledge Sharing Practices as emphasised by Sectors of the Manufacturing Industry

Sector	3 Most Emphasised Practices	3 Least Emphasised practices	Mean score
Breweries	KSPS20 KSPS9 KSPS18	KSPS25 KSPS23 KSPS22	3.98
Domestic products	KSPS26 KSPS14 KSPS12	KSPS8 KSPS9 KSPS18	4.12
Food & Beverages	KSPS9 KSPS10 KSPS14	KSPS20 KSPS25 KSPS13	3.72
Healthcare	KSPS12 KSPS9 KSPS24	KSPS20 KSPS13 KSPS17	3.86
Packaging	KSPS12 KSPS25 KSPS26	KSPS13 KSPS17 KSPS20	3.51
Building materials	KSPS10 KSPS12 KSPS14	KSPS20 KSPS22 KSPS23	3.97
Conglomerates	KSPS12 KSPS9 KSPS15	KSPS27 KSPS26 KSPS20	3.67

Research Question 7: What are the reasons for implementing knowledge management practices in the manufacturing industry in Nigeria?

The participants were asked to indicate why they think their companies engaged in the knowledge management practices on a checklist and the reasons are presented in Table 4.8.

Table 4.8: Reasons for Implementing KM Practices in the Manufacturing Industry in Nigeria

Reasons for KM	Number of respondents who said 'Yes' (N=182)	Percent
To improve the quality of products and services	165	90.6%
For better customer satisfaction	155	85.2%
To increase market share	150	82.6%
To retain quality personnel	145	79.9%
To increase sales	155	85.2%
To improve public image	132	72.5%
To enhance competition	132	72.5%
To support research and development	131	71.8%

The reasons were mainly to foster the organisational performance of the companies in order to have competitive advantage over others that were in the same business.

Research Question 8: To what extent does the organisational structure support knowledge management practices in the manufacturing industry in Nigeria?

Table 4.9 presents their mean responses, standard deviation and percent levels of agreement and disagreement to statements in the organisation structure assessment scale (OSAS). The mean scores of participants indicated that they moderately agreed that their workplace structure would support a successful implementation of knowledge management in their companies. A closer look at the responses indicated that the participants perceived their organisations to have a structure that informs, involves and inspires knowledge sharing and organisational learning. The respondents believed that their organisations have a culture that appreciated knowledge sharing and knowledge creation as participation and collaboration processes and not as a proprietary. This was revealed in the percentage (78.8% and 79.9%) of respondents that strongly agreed and agreed with OSAS 32 and OSAS 38 respectively.

The organisational structure of the companies could be described as sociable and friendly. This sociability is evident in the percentage of participants that agreed and strongly agreed to items OSAS29 (69.6%), OSAS33 (54.4%) and OSAS36 (76.5%). Teamwork is another attribute of the cultural environment of the companies under the study according to the percentage of participants that agreed to OSAS 35 (73%) and OSAS 37 (70.4%).

Also, the participants believed that their organisations provided the opportunities for people within the organisations to interact. This is reflected in 64.7%, 76.5% and 63.1% respondents respectively agreeing to items OSAS28, OSAS36, and OSAS50 of the organisational structure scale. Customer satisfaction could also be considered as an important value in the organisations studied. This was observed in the number of participants that agreed to items OSAS30 (70.3%) and OSAS37 (70.4%). It indicated that the participants believed that their companies put customer at the centre of their cultural values.

Furthermore, the organisational structure of the companies seemed to encourage sense of belonging as 78.7%, 68.5%, 61% and 66.2% agreed to items

OSAS49, OSAS51, OSAS52 and OSAS53 respectively. This implied that the contribution of individual employee was recognised and appreciated although not necessarily limited to knowledge management. It could also imply that the views and opinions of employees were welcome and that whatever they contribute/say would influence future vision. This open culture could be very powerful in generating commitment and loyalty that is germane to knowledge management practices.

In sum the response patterns showed that the organisations had cultures and structures that could be adjudged KM friendly and KM ready because they supported information flow, promoted collaboration, facilitated team spirit, and recognised innovation and creativity.

Table 4.9: Extent to which Organisational Structure supports KM Practices in the Manufacturing Industry in Nigeria

Organisational structure supporting KM practices (N= 182)	Mean	SD	Agree	Disagree	Undecided
OSAS28: Our reporting relationships do not interfere with people (other than our direct line manager) getting the information they need.	3.65	0.94	64.7%	12.8%	22.6%
OSAS29: We seriously consider what others might call crazy or outrageous as part of our problem-solving process.	3.72	0.91	69.6%	12.3%	18.1%
OSAS30: Involving our customers in the process of creating and developing new products and services is a well-established practice in our organisation.	3.83	1.03	70.3%	10.8%	18.8%
OSAS31: People would describe our organisation as flexible rather than rigid.	3.80	0.98	64.0%	7.3%	28.7%
OSAS32: Our workspace is designed to promote the flow of ideas between work groups.	3.92	0.95	78.8%	11.7%	9.5%
OSAS33: We use approaches that people would call playful as part of our problem-solving process.	3.53	1.10	54.4%	17.6%	27.9%
OSAS34: We actively collaborate with other organisations when we need information.	3.70	1.06	69.9%	16.9%	13.2%
OSAS35: Teams engage in off-site learning experiences to find better ways of working together.	3.80	0.92	73.0%	8.0%	19.0%
OSAS36: The hierarchy of our organisation is not a barrier to the flow of ideas and information.	3.90	1.06	76.5%	10.3%	13.2%
OSAS37: We find ourselves increasingly teaming up with other organizations in strategic networks or partnerships to bring innovative products/services to our customers.	3.70	0.99	70.4%	12.5%	17.0%
OSAS38: People can identify others in the organisation that might benefit their knowledge.	3.97	0.79	79.9%	3.7%	16.4%
OSAS39: People in our organisation can use the information they get to improve their work.	4.07	0.71	84.7%	2.2%	13.1%
OSAS40: We have a formal policy that ensures we share technology and ideas across unit or departmental border.	3.86	1.01	72.3%	8.8%	19%
OSAS49: We give all promising ideas thorough consideration, no matter from whom they come from.	4.00	0.77	78.7%	2.8%	18.4%
OSAS50: We make a point of not structuring some of our meetings because it helps us think more creatively about problem solving.	3.72	1.02	63.1%	12.0%	24.8%
OSAS51: Our organisation treats people like assets rather than costs.	3.85	1.06	68.5%	11.2%	20.3%
OSAS52: People who leave the organisation are given the opportunity to document their tacit (stored in their head) knowledge.	3.65	1.12	61.0%	16.3%	22.7%
OSAS53: Before people are retrenched, our organisation determines if their skills expertise can be used elsewhere.	3.80	1.05	66.2%	11.2%	22.5%

The responses also indicated that the participants perceived their organisations to have a structure that informs, involves and inspires knowledge sharing and organisational learning. The respondents believed that their organisations have a culture that perceived knowledge sharing and knowledge creation as a participation and collaboration and not as a proprietary. This was revealed in the percentage (78.8% and 79.9%) of respondents that strongly agreed and agreed with OSAS 32 and OSAS 38 respectively. The organisational culture and structure of the companies could be described as sociable and friendly. This sociability is evident in the percentage of participants that agreed and strongly agreed to items OSAS29 (69.6%), OSAS33 (54.4%) and OSAS36 (76.5%). Teamwork is another attribute of the cultural environment of the companies under the study according to the percentage of participants that agreed to OSAS 35 (73%) and OSAS 37 (70.4%).

Also, the participants believed that their organisations provided the opportunities for people within the organisations to interact. This is reflected in 64.7%, 76.5% and 63.1% respondents respectively agreeing to items OSAS28, OSAS36, and OSAS50 of the organisational structure scale. Customer satisfaction could also be considered as an important value in the organisations studied. This was observed in the number of participants that agreed to items OSAS30 (70.3%) and OSAS37 (70.4%). It indicated that the participants believed that their companies put customer at the centre of their cultural values.

Furthermore, the organisational structure of the companies seemed to encourage sense of belonging as 78.7%, 68.5%, 61% and 66.2% agreed to items OSAS49, OSAS51, OSAS52 and OSAS53 respectively. This implied that the contribution of individual employee was recognised and appreciated although not necessarily limited to knowledge management. It could also imply that the views and opinions of employees were welcome and that whatever they contribute/say would influence future vision. This open culture could be very powerful in generating commitment and loyalty that is germane to knowledge management practices.

In sum the response patterns showed that the organisations had cultures and structures that could be adjudged KM friendly and KM ready because they supported information flow, promoted collaboration, facilitated team spirit, and recognised innovation and creativity.

Moreover, the responses were compared across types of the manufacturing industry to ascertain which had a better structure that would support KM practices. Figure 4.6 presents the mean scores and standard deviations of the responses.

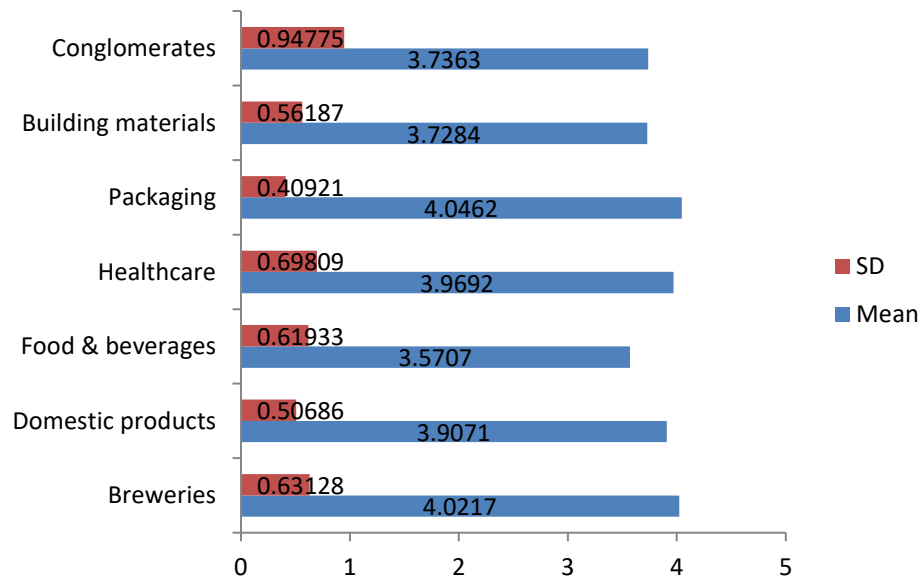


Figure 4.7: Extent to which Organisational structure supports KM Practices in the Manufacturing Industry according to Sector

Research Question 9: To what extent do the technologies used support Knowledge Management practices in the Manufacturing Industry in Nigeria?

An adequate ICT infrastructure is needed to fully implement KM in an organisation. Although the companies studied did not deploy any KM specific technology, many of them were observed to use basic ICT infrastructure such as personal computers, internet connections, electronic mail, corporate websites, portals, document handling systems, telephone, database management systems, social media platforms (e.g. Facebook, Twitter), electronic meeting management systems, and others. In order to confirm if the ICTs deployed support KM related practices in the manufacturing industry in Nigeria, participants were requested to express their levels of agreement with the statements in the technology infrastructure assessment scale (TIAS). Table 4.10 presents the extent to which participants agreed with the statements.

The responses showed that the level of agreement was high for majority of the statements. For instance, items TIAS46, TIAS47, TIAS48 and TIAS44 had mean scores that is higher than 4.00. Particularly, the respondents believed that information

technology was viewed as a tool that could help them do their work and that most people in their organisations have access to personal computers. Also, the participants agreed to the statements: “it is easy to retrieve documents from our electronic or physical storage spaces” and “our IT systems connect us to information sources we need to do our work”. This indicated that the manufacturing industry in Nigeria was prepared, in terms of information and communications technology, for a formal implementation of knowledge management initiatives.

Table 4.10: Extent to which Technologies Used support KM practices in the Manufacturing Industry in Nigeria

Technologies and tools supporting KM practices N= 182	Mean	SD	Agree	Disagree	Undecided
TIAS46: We view information technology as a tool to help us get our work done.	4.39	.82	90.8%	4.2%	4.9%
TIAS47: It is easy to retrieve documents from our electronic or physical storage spaces.	4.26	.89	88.8%	7.0%	4.2%
TIAS48: Most people in our organisation have access to a personal computer.	4.17	.98	78.4%	7.8%	12.8%
TIAS44: Our IT systems connect us to information sources we need to do our work.	4.11	.77	85.6%	2.8%	11.5%
TIAS45: Our IT systems promote the formation of different networks of people.	3.98	.97	76.8%	8.0%	15.2%
TIAS42: The organisation has created electronic (e.g. intranet) and paper-based tools which direct people to available resources.	3.94	.89	74.1%	6.4%	19.4%
TIAS41: The electronic and physical places where we store our knowledge contain the best information available on a wide range of critical topics.	3.76	.91	69.6%	9.4%	21.0%
TIAS43: People can search for information across a wide variety of applications and databases.	3.70	.98	63.3%	12.3%	24.5%

Research Question 10: How well is the organisational performance in the manufacturing industry in Nigeria?

The respondents were requested to indicate how they felt their companies had performed in the last five years when compared to similar organisations in 16 aspects of their operations on a scale of 6. Statistically, the managers felt that their companies had performed very well in the aspects of operations considered because the mean scores of their responses were more than 4.00 as shown in Table 4.11.

Table 4.11: Organisational Performance in the Manufacturing Industry in Nigeria

Aspects of operations	Organisational Performance		
	Mean	SD	Remark
MIPAS1: Improved efficiency	4.65	1.04	Very good
MIPAS2: Improved decision making	4.65	0.99	Very good
MIPAS3: Improved responsiveness	4.80	0.98	Very good
MIPAS4: Improved creativity and innovation	4.72	0.93	Very good
MIPAS5: Lower cost of production	4.52	1.01	Very good
MIPAS6: Improved customer satisfaction	4.79	1.02	Very good
MIPAS7: Avoiding duplications of effort/processes	4.64	1.06	Very good
MIPAS8: Cycle time reduction	4.51	1.08	Very good
MIPAS9: Increased sales volume	4.79	1.04	Very good
MIPAS10: Improved flexibility	4.64	1.10	Very good
MIPAS11: Reduced time-to-market of products	4.61	1.21	Very good
MIPAS12: Improved product customization and branding	4.76	1.01	Very good
MIPAS13: Increased revenues from the patents	4.53	1.06	Very good
MIPAS14: Higher return on assets and equity	4.64	0.96	Very good
MIPAS15: Improved corporate image	4.87	0.98	Very good
MIPAS16: Good corporate planning	4.89	0.94	Very good

4.5 Test of Hypotheses

This section reports the results of the six null hypotheses tested in this study.

H₀₁: There is no significant relationship between KM practices and organisational performance in the manufacturing industry in Nigeria.

Table 4.12: Relationship between KM Practices and Organisational Performance in the Manufacturing Industry in Nigeria

Variables	N	Mean	SD	r	p	Decision
Organisational performance	182	75.06	13.33	0.56**	0.00	H ₀₁ rejected
KM practices	182	197.16	33.24			

Results of correlation analysis as shown in Table 4.12 revealed that H₀₁ is rejected because Pearson correlation coefficient, r, is significant at p<0.05. It could be inferred that KM practices have positive and significant relationship with organisational performance in the manufacturing industry in Nigeria. This means that as the companies engage in KM practices, their organisational performance would improve.

H₀₂: Knowledge creation practices will not have significant influence on organisational performance in the manufacturing industry in Nigeria.

The Paired Sample t-test was used to ascertain if knowledge creation practices will have a significant influence on organisational performance in the manufacturing industry in Nigeria and the hypothesis was not supported by the result of data analysis because the t value obtained significant at p<0.05 as shown in Table 4.13. The result implies that knowledge creation practices have significant influence on organisational performance in the manufacturing industry in Nigeria.

Table 4.13: Influence of Knowledge Creation Practices on Organisational Performance in the Manufacturing Industry in Nigeria

Variables	N	Mean	SD	r	t	df	p
Knowledge Creation Practices	182	25.76	5.15	0.50	57.04**	181	0.00
Organisational Performance	182	75.06	13.33				

H₀₃: Knowledge sharing practices will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

The Paired Sample t-test was used to verify if knowledge sharing practices will have significant influence on organisational performance in the manufacturing industry in Nigeria. The result of the analysis reveals that the obtained t value is not significant because p>0.05, therefore the hypothesis is accepted.

Table 4.14: Influence of Knowledge Sharing Practices on Organisational Performance in the Manufacturing Industry in Nigeria

Variables	N	Mean	SD	r	t	df	p
Knowledge Sharing Practices	182	73.88	13.21	0.48	1.18	181	0.24
Organisational Performance	182	75.06	13.33				

H₀4: Organisational structure supporting KM Practices will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

The result of the Paired Sample t-test used to test H₀4 reveals is presented in Table 4.15.

Table 4.15: Influence of Organisational Structure supporting KM Practices on Organisational Performance in the Manufacturing Industry in Nigeria

Variables	N	Mean	SD	r	t	df	p
Organisational Structure	182	66.15	13.45	0.54	9.34**	181	0.00
Organisational Performance	182	75.06	13.33				

The result shows t value to be significant at $p < 0.05$ therefore, the hypothesis is rejected. This implies that organisational structure supporting KM practices will have significant influence on organisational performance in the manufacturing industry in Nigeria.

H₀5: Technologies used to support KM Practices will not have significant relative influence on organisational performance in the manufacturing industry in Nigeria.

Table 4.16 presents the result of the Paired Sample t test to test H₀5 which states that technologies used will not have significant influence on organisational performance in the manufacturing industry in Nigeria. The obtained t value is significant at $p < 0.05$ therefore, the hypothesis is rejected. This implies that

technologies used in the manufacturing industry will influence its organisational performance.

Table 4.16: Influence of the Technologies used on Organisational Performance in the Manufacturing Industry in Nigeria

Variables	N	Mean	SD	r	t	df	p
Technologies used	182	31.37	13.45	0.41	43.47**	181	0.00
Organisational Performance	182	75.06	13.33				

H₀₆: Knowledge creation practices, knowledge sharing practices, organisational structure and technologies used will not jointly and significantly influence organisational performance in the manufacturing industry in Nigeria.

The hypothesis, H₀₆ is tested using the Multiple Regression analysis and the results are presented in Tables 4.17, 4.19 and 4.19. Table 4.17 presents the Model summary of the relationship between knowledge creation, knowledge sharing, organisational structure, technologies used and organisational performance in the manufacturing industry in Nigeria. The summary shows that knowledge creation, knowledge sharing, organisational structure and technology and tools supporting KM practices jointly explained 34% of the variance in the organisational performance in the manufacturing industry in Nigeria. But H₀₆ is rejected because the F value obtained from Multiple Regression analysis is not significant at $p < 0.05$ as shown in Table 4.18.

Table 4.17: Model Summary of the Relationship between Knowledge Creation, Knowledge Sharing, Organisational Structure and Technologies Used to support KM Practices and Organisational Performance in the Manufacturing Industry in Nigeria

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.58	0.34	0.32	10.97

Table 4.18: Joint Influence of Knowledge Creation, Knowledge Sharing, Organisational Structure and Technology Used support KM Practices on Organisational Performance in the Manufacturing Industry in Nigeria

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10820.86	4	2705.22	22.46	0.00
	Residual	21317.47	177	120.44		
	Total	32138.34	181			

Dependent variable is organisational performance

Table 4.19 shows the relative contribution of the independent variables namely: knowledge creation practices, knowledge sharing practices, organisational structure and technologies used to support KM practices to organisational performance in the manufacturing industry in Nigeria. The results show that knowledge creation practices and organisational structure have significant relative contributions to organisational performance because their Beta values, 0.27 and 0.34 respectively are significant at $p < 0.05$. This implies that knowledge creation practices and organisational structure will explain about 27% and 34% respectively of the contributions of knowledge management practices to organisational performance in the manufacturing industry in Nigeria. However, knowledge sharing practices and technologies will not have significant relative contributions to organisational performance in the manufacturing industry in Nigeria because their Beta values are low (.01 and 0.05 respectively) and not significant at $p < 0.05$ as shown in Table 4.19

Table 4.19: Relative Contributions of Knowledge Creation, Knowledge Sharing, Organisational Sturcture and Technologies Used to Organisational Performance in the Manufacturing Industry in Nigeria

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31.38	5.15		6.09	0.00
	Knowledge creation	0.69	0.23	0.27	2.96	0.00
	Knowledge sharing	.008	0.11	.01	0.08	0.94
	Organisational structure supporting KM	0.34	0.11	0.34	3.06	0.00
	Technology & tools supporting KM	0.10	0.20	0.05	0.53	0.60

Dependent variable is organisational performance

4.6 Discussion of Findings

Analyses of data collected from the interview sessions and perusal of the contents of official documents revealed that the companies have priorities which are channeled towards have advantage over competitors. With this level of commitment, the companies will not hesitate to invest on business optimisation strategies, such as knowledge management, to increase their market share and improve performance. Therefore, it is pertinent to sensitise the operators in the manufacturing industry to the benefits and strategies of implementing knowledge management.

The manufacturing industry in Nigeria also considered knowledge to be critical to its success. Analysis of interview data shows that different types of knowledge ranging from feedbacks from customers to development in the industry are considered to be crucial to the operations of the companies studied. This finding supports the assertion of Drucker (1994) that the performance and survival of any organisation will depend on the quality and quantity of knowledge in the organisation. Therefore, more awareness should be created for the manufacturing industry to embrace knowledge management practices for sustainable competitive advantage and success.

Knowledge management does not have a formal status in the manufacturing industry in Nigeria. Evidences from the official documents of the companies studied indicated knowledge management as phrase and related terminologies were not in regular usage in the lexicons of the companies. Likewise, majority of the top management personnel interviewed expressed that they never heard about the concept before the time they were interviewed. This may inform the reason why none of the companies studied official positions designated for KM personnel, an indication that knowledge management is not institutionalised in the manufacturing industry in Nigeria. This development further stresses the need to create awareness about KM among the operators of the Sector.

The findings of the study indicated that knowledge creation and sharing are practiced in the manufacturing industry though informally. The companies studied engage in knowledge creation activities like: training on new systems and technologies, identifying important information by experts, outsourcing skills and expertise and engaging in team learning for working together. Similarly, a number of knowledge sharing activities are going on in the companies. These included gathering feedback from customers, applying lesson learnt from outside the organisation to their

work, applying previous experiences to present work situation, organisational support for teamwork, and placing value on individual contributions to the organisation among others. However, these practices vary from company to company because of the differences in organisational goals and types of knowledge used (Gloet and Terziowski, 2004). Since the companies did not have any formalised procedures or programmes for managing their knowledge assets there could be loss of organisational knowledge, expensive duplication of knowledge creation activities and reduced organisational competitiveness; which were identified by Davenport and Prusak (2000) and Takeuchi and Nonaka (2004) as results poor management of organisational knowledge. Therefore, the manufacturing industry in Nigeria needs to adopt deliberate strategies to formalise KM practices.

Furthermore, the findings of the study show that the companies surveyed organisational structure that moderately support knowledge management practices. They believe that their organisations have structures that consider all promising ideas irrespective of the owner, allow staff to use personal knowledge for workplace development, encourage knowledge sharing and teamwork, do not hinder flow of ideas, treat people like assets and involve customers in the process of creating and developing new products. This indicates that the manufacturing industry in Nigeria has a friendly and sociable environment that will support KM practices to a large extent. Therefore, formalising KM practices will be an easy task anytime they decide to do it.

One obvious gap in the organisational structure of the companies studied is the absence of people specifically assigned with the roles of coordinating, managing and setting the cause of KM. These are the leaders who, according to Holsapple and Joshi, 2000, should establish essential structures for promoting KM and demonstrating its strategic importance to organisational performance. The manufacturing industry in Nigeria, therefore, needs to take a critical look at this area if it wishes to implement KM effectively.

In terms of technology use in the manufacturing industry in Nigeria, the findings of the study reveal that the use of technologies in the companies will support KM practices. For instance the respondents believe that information technology help them to get their work done. They also believe that it easy to retrieve documents from information storage systems and that their information technology systems readily connect them to information sources as well as promoting formation knowledge

sharing networks. However, there is a need for deliberate adoption of KM specific technology for effective implementation of KM practices in the organisations. Such technologies are designed to support collaboration, coordination and communication processes which are vital to knowledge creation and sharing. Although technology may not be the ultimate KM solution, it is a vital tool to its implementation (Wong, 2005). Therefore, the manufacturing industry in Nigeria should make it a part of their considerations for KM adoption.

The operators of the manufacturing industry in Nigeria are found in the study to perceive their companies to fare very well in their organisational performance in the last five years relative to similar organisations and product market competitors. This implies that despite the observed less than 10% of its contribution to the Gross Domestic Product (GDP) of the Nation's economy (Central Bank of Nigeria, 2013), the operators of the manufacturing companies see themselves as better than competitors in corporate image, corporate planning, sales volume, customers' satisfaction and other indices of performance. This measurement of performance may be subjective, it is allowed when it is difficult to differentiate between intra-industry and inter-industry performance; and when researchers face the problem of allocating the assets, sales, etc of multi-industry firms among the various industries within which they do business (Dess and Robinson, 1984). This is the case with the present study. The manufacturing industry was considered as a sector of the Nigerian economy and individual companies in the Industry. Therefore, the respondents' perceptions of their companies' performance relative to similar organisations and product market competitors was relied upon.

Moreover, the findings of the study show that the entire null hypotheses are not supported. For instance, a positive significant relationship was found between knowledge management practices and organisational performance in the manufacturing industry in Nigeria. The results of the Multiple Regression analysis reveal that knowledge creation and sharing practices, organisational structure and technologies used to support KM practices have a joint significant influence on organisational performance in the manufacturing industry in Nigeria. The four independent variables jointly make 34% contribution to the variance in organisational performance in the manufacturing industry. This finding is similar to that of Zack et al (2009) who found that the extent to which the respondent organisations engaged in KM practices was significantly and positively related to organisational performance.

It is also in line with the assertions in KM literature that KM practices were positively associated with organisational performance both qualitatively (Massey et al, 2002) and quantitatively (Choi and Lee, 2003; Darroch and McNaughton, 2003; Tanriverdi, 2005). This infers that when the manufacturing industry deliberately and formally adopts knowledge management practices it will positively enhance its performance.

Wong and Wong (2010) had pointed out the areas of manufacturing that had been positively affected by KM practices to include: increase in customers and sales, improved process control, increase in production and innovation, enhancement of financial performances, capacity and competitiveness building, and support for decision-making process. These evidences implied that the manufacturing industry in Nigeria was poised to overcome some of the perennial problems confronting it if it could marshal its potentials towards institutionalising KM practices.

Also, knowledge creation practice was found to have significant influence on organisational performance in the manufacturing industry in Nigeria. This result is in accordance with the findings of previous researches such as Anand, Ward and Tatikonda (2010) who found that certain process improvement practices facilitate the creation of organisational knowledge which in turn influences performance outcomes. This supports an earlier finding of Cua, McKone and Schroeder (2001) that found the use of knowledge-creating practices to positively influence manufacturing performance outcomes. Similarly, the findings of this study corroborated the findings of Dermol (2013) and Jordan (2012) who found organisational performance to be positively influenced by knowledge creation processes.

Knowledge creation was also found to make 27% relative contribution to the variance in organisational performance in the manufacturing industry in Nigeria occasioned by knowledge management practices. This indicates that knowledge creation components of KM have a direct influence organisational performance in the manufacturing industry. The key message from this finding therefore, is that it is necessary for the manufacturing industry in Nigeria to establish processes that will enable continuous experimenting for new ways of doing things, and continuously evaluating experiments and new ideas for improved organisational performance.

Another important finding of this study is that knowledge sharing practices have significant influence on organisational performance in the manufacturing industry in Nigeria. This corroborates the findings of earlier studies that established positive relationship among knowledge sharing and organisational performance. For

example, Huang, Chen and Stewart (2010) assert that knowledge sharing can enhance the development of new products which could leverage organisational performance. This supports other previous findings that establish positive links between product quality and innovation (Kim and Kim, 2000), as well as increased work performance (Kang, Kim and Chang, 2008) and financial performance (Wu, Lee and Tsai, 2012). Similarly, Wang and Wang (2012) and Xu, Houssin, Caillaud and Gardoni (2010) argued that explicit and tacit components of knowledge sharing practices play important role in innovation which also leads to improved organisational performance. The implication of this finding therefore, is that the manufacturing industry in Nigeria should conceive and implement knowledge sharing strategies for improved organisational performance. However, knowledge sharing does not have direct influence on organisational performance in this study.

This study also reveals that the organisational structure in the manufacturing industry in Nigeria supports knowledge management practices. It also shows that the organisational structure significantly influenced organisational performance in the manufacturing industry and that it has about 34% relative contribution to the variance in organisational performance. This implies that organisational structure is crucial to knowledge management practices and organisational performance therefore; the manufacturing industry in Nigeria needs to design their organisations appropriately such that knowledge creation and sharing will be enhanced and organisational performance will improve. This can be achieved through formulation of KM-oriented policies, imbuing cultures that promotes and sustain knowledge creation and sharing, designating KM positions and appointing qualified personnel to manage KM strategies and engaging specific KM technologies.

Technology capabilities of an organisation have been found to have significant positive relationship with knowledge management practices which culminates into better performance (Hawajreh and Sharabati, 2012). The current study also finds technology having an indirect influence on organisational performance because the influence of technologies used to support KM practices was tested on organisational performance in the manufacturing industry in Nigeria. This indicates that when a manufacturing company adopts technologies for the purpose of knowledge management activities, its performance will improve. The result of Multiple Regression analysis also shows that technologies used to support KM practices have no significant relative contribution to the variance in organisational performance in

the manufacturing industry in Nigeria. This implies that adopting technology without a specific purpose is not likely to affect the performance of an organisation. Therefore, the manufacturing industry is advised to align its technology adoption decisions with KM strategies in order to reap its full benefits and improve performance.

With all these findings, it is hereby submitted that institutionalising KM practices in the manufacturing industry in Nigeria will improve its organisational performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarises the major findings of both qualitative and quantitative analysis of data collected for the study.

5.2 Summary of Major Findings

The following are the major findings of the study:

- i. The competitive priorities of the manufacturing industry in Nigeria are to produce quality products, achieve customer satisfaction, and innovation.
- ii. The manufacturing industry in Nigeria recognises knowledge as a part of its organisational assets.
- iii. The manufacturing industry in Nigeria considered feedback from customers, competencies of employees, information about raw materials and products, and knowledge of competitors' performance as the knowledge types that are critical to their success.
- iv. The manufacturing industry in Nigeria does not have any formal knowledge management programmes and knowledge management has not been institutionalised.
- v. Knowledge management creation practices are going on moderately and informally in the manufacturing industry in Nigeria.
- vi. Knowledge sharing practices were implemented at moderate levels in the manufacturing industry in Nigeria.
- vii. The organisational structure in the manufacturing industry in Nigeria will moderately support knowledge management practices.
- viii. The technology infrastructure used in the manufacturing industry in Nigeria will moderately support knowledge management practices.

- ix. Knowledge management practices have significant positive relationship with organisational performance in the manufacturing industry in Nigeria.
- x. Knowledge creation practices will have significant influence on organisational performance in the manufacturing industry in Nigeria.
- xi. Knowledge sharing practices will have significant influence on organisational performance in the manufacturing industry in Nigeria.
- xii. Organisational structure supporting knowledge management practices will have significant influence on organisational performance in the manufacturing industry in Nigeria.
- xiii. Technologies used to support knowledge management practices will have significant influence on organisational performance in the manufacturing industry in Nigeria.
- xiv. Knowledge creation practices, knowledge sharing practices, organisational structure and technologies used to support knowledge management practices will significantly and jointly influence organisational performance in the manufacturing industry in Nigeria.
- xv. Organisational structure supporting KM practices significantly and positively influenced organisational performance in the manufacturing industry in Nigeria.

5.3 Implications of the Study

The findings of this study have implications for the manufacturing industry in Nigeria. KM practices have shown strong positive relationship with organisational performance in the manufacturing industry, therefore the organisations could harness the opportunities provided by the concept to stem some of the challenges confronting the industry in Nigeria. The industry could begin to deliberately establish formal structures; deploy right technologies and other resources and formulate and execute policies in order to institutionalise KM practices for improved performance. The result of this could be the revitalisation of the Nigerian manufacturing industry and eventual wealth creation and economic growth.

Likewise, the study has implications for the information profession in Nigeria. It has shown the need for organisations to create knowledge management units and employ qualified personnel to manage the portfolio. These qualified personnel cannot be any other than information professionals who have had relevant education and

training in the organisation and management of knowledge and information resources. As it is apparent from the findings of the study, the manufacturing industry may be lacking in personnel with requisite skills for managing organisational knowledge because none of the companies studied appointed specific officers for KM. Therefore, information professionals could capitalise on this major deficiency to help themselves and also the organisations that might be willing to implement KM. This could serve as an avenue of job creation for graduates of library and information science in Nigeria.

The study also has implication for the academics. The non-institutionalisation of KM practices in the manufacturing industry in Nigeria has attested to the dearth of research in that area in literature. KM, being an emerging discipline, is still floating in the realms of economics, management, engineering, psychology, information technology, and others; and it is yet to have its own theories as a discipline. Therefore, the findings of this study could serve as an eye opener to LIS academics to begin to research into the subject area and design curriculum that would reflect on the Nigerian context and business environment.

5.4 Contributions of the Study to Knowledge

This research has provided an empirical investigation of KM practices in the manufacturing industry in Nigeria in relationship with its organisational performance. Its major contribution to knowledge is that there is a positive significant relationship between knowledge management practices and organisational performance in the manufacturing industry in Nigeria. This suggests that creating more awareness about KM practices could motivate the manufacturing industry in Nigeria to institutionalise its implementation for improved performance.

The study also demonstrates that knowledge creation and organisational structure have relative individual contributions to the effect of knowledge management practices on organisational performance in the manufacturing industry in Nigeria. This implies that the manufacturing industry can concentrate on these aspects of knowledge management as a strategy to improve organisational performance. This is an eye-opener for organisations that may be contemplating knowledge management implementation and not sure of where to start.

5.5 Limitations of the Study

Methodologically, a limitation of this study relates to the research instrument that may have introduced a mono-method bias because all the construct measures are included in the same questionnaire and the data are collected at the same time. Therefore, it is possible that the responses to some items of the instrument might affect the answers to other items because of the way the items are grouped together on the instrument.

The study targeted the manufacturing industry in Nigeria. This may have implications because the sample comprised of companies that have certain commonalities with respect to geography. This can be a limitation because results of this study may not be generalisable to cultures that are significantly different from the business culture and norms in Nigeria.

Insufficient knowledge about the structure of the organisations studied in terms of roles and hierarchies of individuals studied can also be a limitation to the study as it was difficult to identify the right persons to include as respondents. In most cases the research instruments were delivered generically to the top executives of the organisations hence, it was difficult to determine if the actual respondents had the sufficient knowledge or information required to complete the questionnaires. This could have introduced errors to the data collected for the study.

Another possible limitation is that some of the companies studied made the researcher to undertake that they should not be mentioned in the report of the study. This hampered in-depth analyses that could have helped useful comparison of data collected from them. In some cases, officials of the companies refused bluntly to permit the researcher to enter their premises let alone collecting data. Even, in places where access was not denied the researcher visited more than twice before data could be collected. This added to the cost of the study and also, prolonged its duration unnecessarily.

5.6 Conclusion

The results of the study demonstrate that knowledge management practices can improve the performance of the manufacturing industry in Nigeria. Therefore, if manufacturing firms desire to enhance their organisational performance they need to embrace knowledge creation and sharing practices in an organisational environment

that is conducive for knowledge management practices, as well as adopting technologies that will support the programmes.

5.7 Recommendations

The findings the following measures are recommended to entrench KM practices for improved organisational performance in the manufacturing industry and other corporate concerns in Nigeria:

- i. It was apparent from the findings of the study that the manufacturing industry in Nigeria has not formalised knowledge management practices. This could be due to lack of awareness of the potentials of knowledge management to improve organisational performance. Therefore, more awareness should be created about the potentials and benefits of knowledge management practices to the manufacturing industry in Nigeria through seminars, conferences, workshops, webinars, training, and others in order to ensure its institutionalisation;
- ii. Since organisational structure was found to support knowledge management practices, manufacturing organisations should review their business policies in order to include KM-promoting ideas and remove KM-defeating practices.
- iii. Manufacturing organisations should create and include designated KM positions in their workforce as a practical step towards formalising knowledge management practices. Positions such as KM officer, chief knowledge officer (CKO) should be created to coordinate the smooth running of KM functions; and
- iv. It was also found from the study that the manufacturing industry in Nigeria did not using knowledge management specific technologies in their operations. It is therefore recommended that manufacturing industries should consciously and deliberately adopt and acquire KM-specific technologies to drive the management of their knowledge assets.

5.8 Suggestions for Future Research

The present study has only established that there was a positive relationship between KM practices and organisational performance in the manufacturing industry in Nigeria but it did not specify the aspects of organisational performance that were associated with KM. It is hereby suggested that future studies should look at this in order to benchmark the specific areas where organisations in Nigeria would need to direct their KM efforts for maximum results. Similarly, the present research studied large scale manufacturing industry in Nigeria because it was believed that they should have the wherewithal to implement KM projects. However, it could be necessary for future studies to research into KM activities in small and medium scale industries to investigate what is done in this important sector of Nigerian economy. KM is contextual and therefore, its implementation depends more on the people and culture of the environment in which it is implemented. Hence, future studies could also look at KM models that might suit Nigerian business environment in order to benchmark appropriate success factors for its implementation.

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APPENDIX I

UNIVERSITY OF IBADAN

DEPARTMENT OF LIBRARY, ARCHIVAL AND INFORMATION STUDIES (LARIS)

Interview Guide

1. How old is your company?
2. In which sector of the manufacturing industry does your company belong?
3. What is your staff strength?
4. What is your company's average annual sales volume?
5. What would you consider as the competitive priorities to your company?
6. What role does knowledge play in the success of your company?
7. What type of knowledge would you consider critical to the success of your company among the following?
 - a. Feedback from customers;
 - b. Core competencies of employees;
 - c. Raw materials and products information;
 - d. Trends and development in the industry;
 - e. Best practices in the sector;
 - f. Information about competitors;
 - g. Science and technology information
8. Does your company have mechanisms in place for the following?
 - a. Identifying knowledge and expertise
 - b. Analyzing available and required information
 - c. Planning and controlling actions to develop knowledge assets
 - d. Coordinating people, process, technology and organisational structure
9. Does your company engage in any of the following activities?
 - a. Staff training and development
 - b. Connecting people both inside and outside the company
 - c. Regular in-house seminars
 - d. Professional development

- e. Benchmarking best practices
 - f. Discussion of major projects
 - g. Locating skills and expertise within and outside the company
 - h. Promoting teamwork and involvement
 - i. Hiring and training new staff
 - j. Records management
 - k. Buying and keeping books
10. Have you heard of knowledge management before?
 11. Does your company have a formal knowledge management programme?
 12. Who is responsible for knowledge management functions in your company?
 13. Does your company have policies in place for knowledge management?
 14. Does your company have budgets for knowledge management?

APPENDIX II

UNIVERSITY OF IBADAN
DEPARTMENT OF LIBRARY, ARCHIVAL AND INFORMATION STUDIES
(LARIS)

**Questionnaire on Knowledge Management Practices and Organisational Performance
of the Manufacturing Industry in Nigeria**

Dear Respondent,

You have been selected to fill in the following questionnaire that is being distributed in your organisation. Kindly assist me in determining the areas within your organisation where knowledge management initiatives are focused by answering the questions as best as you can. The purpose of the questionnaire is to obtain your opinion regarding knowledge management processes in your company. Knowledge Management (KM) is the process by which an organisation generates wealth from its intellectual or knowledge-based assets. It is the explicit and systematic management of vital knowledge and its associated processes of creation, storage, retrieval, transfer, sharing, and application, in pursuit of organisational objectives.

*Please note that the information obtained from respondents is solely for research purposes in partial fulfillment of the requirements for the award of **Doctoral degree (PhD) in Library & Information Studies at the University of Ibadan**. Also note that there are no correct or incorrect answers. Your participation is greatly appreciated.*

Kind regards

Akinniyi Adel eke

A. PERSONAL INFORMATION

1. Which sector of the manufacturing industry does your company belong?

- Agro-Allied Breweries Building materials Chemical & Paints
Computer & Office equipment Conglomerates Engineering &
Technology Food/Beverages & Tobacco Footwear
Health care
Industrial/Domestic products Packaging Textiles

2. In which section/department do you work in your company?
 Administration Engineering Production Procurement Purchasing & Supply Research & Development Quality control
 Information systems Sales/Marketing Customer care
 Logistics Warehouse other
3. How long have you worked in the company?
 < 3 years 4-10 years 11-15 years > 15 years
4. Did you work in another organisation before your present company? Yes No
5. If the answer to 5 above is “yes”, how long did you work there?

6. In which age category do you belong?
 < 25 years 26-35 years 36-45 years 46-55 years >55 years
7. What is your highest qualification? _____

B. KNOWLEDGE MANAGEMENT PRACTICES ASSESSMENT (KMPA)

8. Indicate the degree to which you agree with the following statements about aspects of knowledge management practices in your company on a scale of 5 (1= strongly disagree, 2= disagree, 3= not sure, 4= agree, 5= strongly agree)

Knowledge creation practices (KCPS)				
1. Training on new systems focuses on how these technologies can be used to improve the quality and efficiency of how people work.				
2. Specific individuals identify, collect, classify, summarise and disseminate organisational knowledge.				
3. Experts play a role in identifying important information for other users				
4. Teams engage in off-site learning experiences to find better ways of working together.				
5. We apprentice our people to other organisations to determine if we need to acquire new skills or expertise.				
6. We form alliances with organisations that complement our skills sets as an alternative to doing everything ourselves.				
7. We outsource skills and expertise that do not support our core competencies.				

Knowledge sharing practices (KSPS)					
	1	2	3	4	5
1. Groups and individuals routinely share information about their expertise					
2. People apply what they learn outside the organisation to their work.					
3. Reflecting on lessons learned from work experiences is an established practice in our organisation.					
4. When people finish projects, they generally take time to meet with their team and analyse what went wrong and what could have been done better.					
5. Our learning process often includes gathering feedback from customers.					
6. People admit when they fail					
7. People apply the ideas they developed in past work situations to their current work.					
8. Our organisation supports group activities that promote mutual learning.					
9. We treat disagreement as an opportunity to learn from one another					
10. Dedicated roles, such as knowledge manager or knowledge co-coordinator, support the knowledge sharing process.					
11. People in our organisation would say that sharing knowledge does not diminish the individual's value to the organisation.					
12. We link people across traditional organizational units and functional groups to promote knowledge sharing.					
13. Knowledge sharing behaviour is built into performance appraisal system.					
14. Our organisation looks for ways to remove barriers to knowledge sharing					
15. We treat information as an open resource that flows freely to all corners of our organisation.					
16. Most people speak up if they have an opinion or idea to offer.					
17. We value the contribution of ideas of everyone in our organisation.					
18. We often meet away from our offices in relaxed settings to discuss work-related issues.					
19. We routinely ask ourselves how we can leverage our knowledge into other areas.					
20. Our managers include knowledge management in their business plans					

Organisational structure Assessment (OSAS)					
	1	2	3	4	5
1. Our reporting relationships do not interfere with people (other than our direct line manager) getting the information they need.					
2. We seriously consider what others might call crazy or outrageous as part of our problem-solving process.					
3. Involving our customers in the process of creating and developing new products and services is a well-established practice in our organisation.					
4. People would describe our organisation as flexible rather than rigid.					
5. Our workspace is designed to promote the flow of ideas between work groups.					
6. We use approaches that people would call playful as part of our problem-solving process.					
7. We actively collaborate with other organisations when we need information.					
8. Teams engage in off-site learning experiences to find better ways of working together.					
9. The hierarchy of our organisation is not a barrier to the flow of ideas and information.					
10. We find ourselves increasingly teaming up with other organizations in strategic networks or partnerships to bring innovative products/services to our customers.					
11. People can identify others in the organisation that might benefit their knowledge.					
12. People in our organisation can use the information they get to improve their work.					
13. We have a formal policy that ensures we share technology and ideas across unit or departmental border.					
14. We give all promising ideas thorough consideration, no matter from whom they come from.					
15. We make a point of not structuring some of our meeting because it helps us think more creatively about problem solving.					
16. Our organisation treats people like assets rather than costs.					

17. People who leave the organisation are given the opportunity to document their tacit (stored in their head) knowledge.					
18. Before people are retrenched, our organisation determines if their skills expertise can be used elsewhere.					
Technology Infrastructure Assessment (TIAS)					
	1	2	3	4	5
1. The electronic and physical places where we store our knowledge contain the best information available on a wide range of critical topics.					
2. The organisation has created electronic (e.g. intranet) and paper-based tools which direct people to available resources.					
3. People can search for information across a wide variety of applications and databases.					
4. Our IT systems connect us to information sources we need to do our work.					
5. Our IT systems promote the formation of different networks of people.					
6. We view information technology as a tool to help us get our work done.					
7. It is easy to retrieve documents from our electronic or physical storage spaces.					
8. Most people in our organisation have access to a personal computer.					

11. Why do you think your organisation engage in the practices above? (Tick as many as applicable to your company)

To improve the quality of products and service

For better customer satisfaction

To increase market share

To retain quality personnel

To increase sales

To improve public image

To enhance competition

To support research and development

Other(s) _____

C. ORGANISATIONAL PERFORMANCE ASSESSMENT

12. Please rate the performance of your company over the years on a scale of six (1= very poor, 2= poor, 3= fair, 4= good, 5= very good, 6= excellent) relative to similar firms and product market competitors in the following aspects of organisational performance indicators.

S/N	Performance indicators	1	2	3	4	5	6
1	Improved efficiency						
2	Improved decision making						
3	Improved responsiveness						
4	Improved creativity and innovation						
5	Lower cost of production						
6	Improved customer satisfaction						
7	Avoiding duplications of effort/processes						
8	Cycle time reduction						
9	Increased sales volume						
10	Improved flexibility						
11	Reduced time-to-market of products						
12	Improved product customization and branding						
13	Increased revenues from the patents						
14	Higher return on assets and equity						
15	Improved corporate image						
16	Good corporate planning						

APPENDIX III

Definitions of Data, Information and Knowledge

Author	Data	Information	Knowledge
Thierauf and Hoor (2006)		Structured data useful for analysis and decision making	Obtained from experts based on experience
Desouza (2005)	Transduced outputs of sensors	Fusion of data; creation of the network incorporating both data and the relationships among data	Placement of information in its larger context (a necessary condition for understanding)
Wig (2004)		Data organised to characterise a particular situation, condition, context, challenge, or opportunity	Facts, perspectives and concepts, mental reference models, truths and beliefs, judgments and expectations, methodologies, and know-how.
Awad and Ghaziri (2004)	Static, unorganised and unprocessed facts. Set of discrete facts about events.	Facts based on reformatted or processed data. Aggregation of data that make decision making easier and has purpose and relevance	Higher level of abstraction that resides in people's minds. Includes perception, skills, training, common sense, and experiences.
Gallup et al (2002)		Data in context.	Integrated information in context.
Dixon (2000)	Unsorted bits of facts.	Data that has been sorted, analysed and displayed.	Meaningful links people make in their minds between information and its application in a specific setting.
Bourdeau and Couillard (1999)		Result of analysing and interpreting data that carries meaning.	Professional expertise appropriate for the domain. Things that are to be true and drive people to action.
Alavi and Leidner (1999)			Justified personal belief that increases an individual's capacity to take effective actions.
Applehans et al (1999)	Measurements	A statement of fact about measurements.	Ability to turn information and data into effective action.
Davenport and Prusak (1998)	A discrete, objective fact about events.	Data that make a difference.	A fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.
Liebowitz and	Representation of a	Data that has been	The whole set of insights,

Wilcow (1997)	fact, number, word, image, picture or sound.	assigned meaning.	experience, and procedures that are considered correct and true and that, therefore guide the thoughts, behaviour, and communication of people.
Vance (1997)			Information that has been authenticated and thought to be true.
Stacey (1996)		Data with special relevance and purpose.	
Nonaka and Takeuchi (1995)		Data put in context. Information is about meaning.	Justified true belief. Knowledge is tied to action.
Argyris (1993)			Capacity for effective action.
King (1993)		Data that make a difference	
Goldman (1991)			Justified true belief
Ackoff (1993)	Symbols	Data that are processed to be useful	Ability to answer “How” questions.
Aune (1970)			Information in context.

Source: Faucher et al (2008)

APPENDIX IV

MANUFACTURING COMPANIES LISTED BY THE NIGERIAN STOCK EXCHANGE

S/N	Sector	Number of companies	Company
1	Agriculture and Agro-Allied Companies	5	Elah Lakes PLC,
2			FTN Cocoa Processors PLC
3			Livestock Feeds PLC
4			Okomu Oil Palm PLC
5			Presco PLC
6	Breweries	7	Champion Breweries PLC
7			Golden Guinea Breweries PLC
8			Guinness Nigeria PLC
9			International Breweries PLC
10			Nigerian Breweries
11			Northern Nigeria Breweries PLC
12			Premier Breweries PLC
13	Building materials	5	Ashaka Cement PLC
14			Cement Co. of North PLC
15			Dangote Cement PLC
16			Nigerian Wire Industries PLC
17			Lafarge WAPCO PLC
18	Chemical and Paints	9	African Paints PLC
19			Berger Paints PLC, CAP PLC
20			DN Meyer PLC
21			IPWA PLC
22			DN Meyer PLC
23			Nigerian-German Chemicals PLC
24			Paints and Coatings Manufacturers PLC
25			Portland Paints & Products PLC
26			Premier Paints PLC
27	Computer and Office equipment/Educational materials	8	Academy Press PLC
28			Hallmark Paper Products PLC
29			Learn Africa PLC
30			Omatek Ventures PLC
31			Studio Press PLC
32			Tripple Gee & Company PLC
33			Thomas Wyatt PLC
34			University Press PLC
35	Conglomerates	5	A.G. Leventis PLC
36			Chellarams PLC
37			PZ Cussons PLC
38			UAC Nigeria PLC
39			UNILEVER Nigeria PLC
40	Engineering and Technology	5	Cutix PLC
41			Nigerian Wire & Cable PLC
42			Austin Laz & Co. PLC
43			Beta Glass Co PLC
44			Nigerian Ropes PLC
45	Food/Beverages and Tobacco	15	7 Up Bottling Company PLC
46			Cadbury PLC
47			Dangote Sugar Refinery
48			Dangote Flour Mills PLC

49			Flour Mills PLC
50			Honeywell Flour Mill PLC
51			MCNICHOLS PLC
52			Multi-Trex Integrated Foods PLC
53			National Salt Company Nig. PLC
54			Nestle Nigeria PLC
55			Nigerian Enamelware PLC
56			PS MANDRIDES & CO PLC
57			Rokana Industries PLC
58			Tantalizers PLC
59			Union Dicon Salt PLC
60			UTC Nigeria PLC
61	Footwear	1	Lennards Nigeria PLC
62	Healthcare	10	Afrik Pharmaceuticals PLC
63			Evans Medical PLC
64			Fidson Healthcare PLC
65			GSK Nigeria PLC
66			Juli PLC
67			May & Baker Nigeria PLC
68			Morrison Industries PLC
69			Neimeth International Pharmaceutical PLC
70			Nigera-German Chemicals PLC
71			Pharma-Deko PLC
72	Industrial and Domestic Products	7	Aluminium Extrusion Industries PLC
73			BOC Gases Nigeria PLC
74			First Aluminium Nigeria PLC
75			Greif Nigeria PLC
76			Vitafoam Nigeria PLC
77			Vono Products PLC
78			DN Tyre & Rubber PLC
79	Packaging	5	ABPLAST Products PL
80			Avon Crowncaps & Containers PLC
81			Nigerian Bag Manufacturing Company PLC
82			Poly Products Nigeria PLC
83			West African Glass Industries PLC
84	Textiles	1	United Nigerian Textiles PLC
	Total	84	

Source: Nigeria Stock Exchange's Website

APPENDIX V

List of Manufacturing Companies Located in Southwestern States of Nigeria

S/N	Name of Company	Location
1	7 Up Bottling PLC	Apapa
2	ABPLAST Products PLC	Magboro
3	Academy Press PLC	Ilupeju
4	African Paints Nigeria PLC	Ikeja
5	AG Leventis PLC	Apapa
6	Aluminum Extrusion Industries PLC	Ikeja
7	Avon Crowncaps & Containers PLC	Otta
8	Berger Paints PLC	Ikeja
9	BOC Gases PLC	Oshodi
10	Cadbury PLC	Ikeja
11	CAP PLC	Ikorodu
12	Chellarams PLC	Oshodi
13	Dangote Cement PLC	Ibese
14	Dangote Flour Mills PLC	Apapa
15	Dangote Sugar Refinery PLC	Apapa
16	DN Meyer (Dunlop) PLC	Ikeja
17	Evans Medical Nigeria PLC	Agbara
18	Fidson Healthcare Nigeria PLC	Shomolu
19	First Aluminium Nigeria PLC	Ikeja
20	FTN Cocoa Processors	Ibadan
21	Glaxo-SmithKline Nigeria PLC	Ilupeju
22	Greif Nigeria PLC	Apapa
23	Guinness Nigeria PLC	Ikeja
24	Hallmark Paper Products PLC	Mushin
25	Honeywell Flour Mills PLC	Apapa
26	International Breweries PLC	Ilesha
27	IPWA PLC	Ikeja
28	Juli PLC	Ikeja
29	Lafarge WAPCO PLC	Ewekoro, Abeokuta
30	Livestock Feeds PLC	Ikeja
31	May & Baker Nigeria PLC	Ikeja
32	Morrison Industries PLC	Oregun
33	Multi-Trex Integrated Foods PLC	Warewa, Ogun Stae
34	National Salt Company PLC	Oregun
35	Neimeth International Pharmaceutical PLC	Ikeja
36	Nestle Nigeria PLC	Shagamu
37	Nigeran Bag Manufacturers Company PLC	Ikeja
38	Nigerian Breweries PLC	Ibadan plant
39	Nigerian Enamelware PLC	Ikeja
40	Nigerian Ropes PLC	Iganmu
41	Nigerian Wire & Cable PLC	Ikeja
42	Nigerian Wire Industries PLC	Ikeja
43	Nigerian-German Chemicals PLC	Otta

44	Omatek Ventures PLC	Oregun
45	Paints & Coatings Manufacturers Nigeria PLC	Ikeja
46	Pharma-Deko PLC	Agbara
47	Poly Products Nigeria PLC	Ilupeju
48	Portland Paints & Products Nigeria PLC	Oregun
49	PZ Cussons PLC	Ilupeju
50	Rokana Industries PLC	Ikeja
51	Tantalizers PLC	FESTAC Town
52	Thomas Wyatt PLC	Iganmu
53	Tripple Gee & Company PLC	Alaba
54	UAC Nigeria PLC	Apapa
55	UNILEVER Nigeria PLC	Agbara
56	Union Dicon Salt PLC	Apapa
57	University Press PLC	Ibadan
58	UTC Nigeria PLC	Apapa
59	Vitafoam Nigeria PLC	Ikeja
60	Vono Products PLC	Ikeja

Source: Nigeria Stock Exchange's Website