ASSESSMENT OF KNOWLEDGE MANAGEMENT CAPABILITIES OF THE NIGERIAN QUANTITY SURVEYING FIRMS

BY

ISMA'IL UMAR

DEPARTMENT OF QUANTITY SURVEYING

FACULTY OF ENVIRONMENTAL DESIGN

AHMADU BELLO UNIVERSITY ZARIA, NIGERIA.

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BY

Isma'il UMAR

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FACULTY OF ENVIRONMENTAL DESIGN,

AHMADU BELLO UNIVERSITY ZARIA,

NIGERIA.

JUNE, 2014

DECLARATION

I hereby declare that the work in this thesis titled "Assessment of Knowledge Management Capabilities of the Nigerian Quantity Surveying firms" was performed by me in the Department of Quantity Surveying, under the supervision of Dr. A. D. Ibrahim and Dr. Y. M. Ibrahim. The information derived from the literature has been duly acknowledged in the text and a comprehensive list of references has been provided. No part of this work has been presented for another degree or diploma at any Institution.

Umar, Isma'il .....

CERTIFICATION

This project thesis titled '**Assessment of Knowledge Management Capabilities of the Nigerian Quantity Surveying firms'** meets the regulations governing the award of the degree of M.Sc. Quantity Surveying of Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

Dr. A.D. Ibrahim	.....	.....
Chairman, Supervisory Committee	Signature	Date
Dr. Y.M. Ibrahim	.....	.....
Member, Supervisory Committee	Signature	Date
Dr. Y.M. Ibrahim	.....	.....
Head of Department	Signature	Date
Prof. A.A. Joshua	.....	.....
Dean, School of Postgraduate Studies	Signature	Date

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ABSTRACT

Knowledge Management (KM) capabilities provide the supportive structure required to share knowledge within the context in which it is required in an organizations. Previous researches have shown that at least more than half of failed KM initiatives and the problem of ineffective KM occur as a result of firms not assessing their capabilities before implementing KM program. This research was aimed at assessing the KM capabilities of Nigerian Quantity Surveying firms in view of adopting and implementing KM concept. A quantitative research approach was undertaken in this study. 78 Structured questionnaires had been administered to the professionals in the practicing Quantity Surveying firms to obtain the required data for the purpose of this study. Our assessment furnished us with the extent of KM capabilities of the Nigerian Quantity Surveying firms and also provides us with the grey areas such as motivation that should be improved in order to adopt and implement KM effectively. The study reveals that Quantity Surveyors have positive perception toward the KM concept and most of them are in the view that Knowledge is a key resource to any firm that owns it and they also have the opinion that adopting and implementing KM in the Nigerian Quantity Surveying firms would enhance their ability in carrying out their cost management services.

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GLOSSARY OF ABBREVIATIONS

ANOVA:	Analysis of Variance
BPF:	British Property Federation
BSI:	British Standard Institution
CC:	Core competence
HND:	Higher National Diploma
ICIDA:	International Conference on Infrastructure Development in Africa
ICT:	Information and Communication Technology
IKCO:	Iran Khodro Company
IM:	Information Management
IT:	Information Technology
KM:	Knowledge Management
KMC:	Knowledge Management Capabilities
KMPC:	Knowledge Management Process Capabilities
NBS:	National Bureau of Statistics
NIQS:	Nigerian Institute of Quantity Surveyors
OND:	Ordinary National Diploma
PGD:	Post Graduate Diploma
QS:	Quantity Surveyors
RICS:	Royal Institute of Chartered Surveyors
ROA:	Return on Assets
ROE:	Return on Equity
SPSS:	Statistical Package for Social Sciences
UK:	United Kingdom
WABER:	West African Built Environment Researchers

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In the last decade, the importance of knowledge has been highlighted by both academics and practitioners (Wu & Lin, 2009). Nowadays, knowledge is the fundamental basis of competition (Zack, 1999; Grant, 1996). Particularly tacit knowledge can be a source of competitive advantage because it is unique, imperfectly mobile, imperfectly imitable and non-substitutable. However, the mere act of processing knowledge itself does not guarantee strategic advantage. Instead, knowledge has to be managed (Zack 1999).

During the formative age of KM, Scarborough & Swan (1999) advanced that, firms that create new knowledge and apply it effectively and efficiently will be successful at creating competitive advantages. From a practice perspective, Zack (1999) further supported this view by stating that, firms are noticing the importance of managing knowledge if they want to remain competitive while Salojurvi, *et al*, (2002) advance the state by adding survival and growth. These realizations among organizations have seen companies everywhere begin to actively manage their knowledge and intellectual capital (DeTienne, *et al*, 2004).

Within the research community, three major factors are emphasized for successful implementation of KM thus; capabilities, processes and organizational performance (Bechman, 1999; O'Dell & Grayson, 1999; Demarest, 1997). Nonaka (1995) opined that KM capabilities are organizational mechanisms for generating knowledge continuously. Stonehouse & Pemberton, (1999) added that, they can encourage acquiring knowledge, protecting knowledge and facilitating knowledge sharing in an organization. However, KM processes can be thought of as a structured coordination for managing knowledge effectively or the tasks and activities that are implemented to manage knowledge (Gold *et al*, 2001).

Constantly, within the KM field, capabilities that influence KM have been advanced as preconditions or organizational resources for effective KM (Lee & Choi, 2003; Malone, 2002; Gold et al, 2001; Gray, 2001; Holsapple & Joshi, 2000; Zack, 1999; Wiig, 1997). For instance, Lee & Choi (2003) emphasized that KM consists of processes to manage knowledge and capabilities to support these processes. They argue that KM capabilities consist of organizational culture, structure, people and information technology support. In addition, Gold *et al*., (2001) examined an empirically effective KM model from the perspective of organizational capabilities. This perspective suggests that a knowledge infrastructure consisting of technology, structure and culture along with knowledge process architecture of acquisition, conversion, application and protection are essential organizational capabilities or preconditions for effective KM.

Furthermore, Krogh *et al*., (2001) defined KM infrastructure as 'organizational mechanism to create knowledge constantly and intentionally' and presented five factors of KM infrastructure such as; the will to generate knowledge, conversation between employees, organizational structure, relationship between employees and human resources. Cooparat *et al*., (2010) stressed that, KM capabilities are divided into resource-based capabilities of structure, culture and technology and knowledge-based capabilities. These are creativity, intelligence, skills, motivation, and communication.

Therefore, to survive and grow the Quantity Surveying professionals must respond quickly and creatively to the challenges of accelerating social, economical and environmental change (Davis *et al*., 2007). An essential element in the future success is the skill and Knowledge base at the core of professional practice (RICS, 2001). It is believed that KM is a relatively quicker and more effective way to enhance Quantity Surveying professionalism (Webb, 1998; Egbu *et al*., 2001).

Considering the importance of KM to Quantity Surveying firms as demonstrated above, researchers and practitioners in Nigeria seems not to have paid adequate attention to the all-important concept (Sodiya *et al*., 2006). This is similarly supported by revelations emanating from analyzing the extent to which the KM concept in researches is undertaking within the West Africa and Africa Sub regions. For instance, in WABER conference of 2012 only 1.63% of the papers presented in the conference were on KM (WABER, 2012). While for conferences within the larger African Sub region, ICIDA of 2013 indicated that only 3.92% of the papers focused on KM (ICIDA, 2013).

Furthermore, another important revelation from such an analysis is the area in which those who do research in KM basically concentrated on. Essentially all the papers that focused on KM dwelt more on KM processes leaving behind the fundamental of KM, which is the organizational capability. As shown earlier, capability is the basic for moving the KM implementation to success (Lee & Choi, 2003; Malone, 2002; Gold et al, 2001; Gray, 2001; Holsapple & Joshi, 2000; Zack, 1999; Wiig, 1997).

To bridge this gap, it is therefore important to begin with a properly documented study and project survey on the assessment of KM capabilities of the Nigerian Quantity Surveying firms since it is the prerequisite to KM processes and organizational performance so that efforts can be concentrated on them in order to adopt and implement KM successfully.

1.2 Statement of Research Problem

Failure to capture and transfer knowledge generated within one project, which is usually as a result of being buried in unread reports and arcane filing systems, or lost because people move on do leads to wasted activity and impaired project performance (Carillo *et al*., 2004). Owing to the increasing complexity of construction projects and requirements from clients, Quantity Surveyors need to equip themselves with a broad range of knowledge. Furthermore, in order to sustain a competitive advantage, the Quantity surveyors professional does not only

need to learn faster than the speed of changes but also learn faster than their competitors. This can only be achieved by establishing a KM system to capture, develop, maintain and renew the intangible assets in the Quantity Surveying firms (Davis *et al*., 2007).

However, literature review has obviously recognized that KM capabilities are precondition or basic to knowledge processes (Hansen, 1999; Szulanski, 1996). In the same vein, study by Adeeko (2012) reveals that insufficient attention has been given to the concept of KM awareness and capabilities in the Nigerian Construction Industry. It is therefore worrisome that there has not been sufficient research in this vital strategy. This lack of study is a motivator to this study, to assess the KM capabilities of the Nigerian Quantity Surveying firms.

1.3 Justification for the Study

The need for change and continuous improvement in the construction industry has resulted in various initiatives, which are aimed at improving the construction process. These initiatives are primarily targeted at reducing fragmentation, and have included; the development of alternative procurement strategies to clarify and improve the communication structure between different participants in the construction process (BPF, 1983; Ashworth, 1991); the use of computer technology to integrate the construction process through the electronic sharing of data/information in both directions at the design-construction interface (Howard *et al*., 1989; Miyatake and Kangari, 1993; Evbuomwan and Anumba, 1996); the adoption of a wide range of concepts, tools and techniques (e.g. total quality management, partnering, etc.) to enhance collaboration and improve efficiency and quality (Baxter and Macfarlane, 1992; Hellard, 1993; Bennett and Jayes, 1998); the development of improved components, materials and construction methods, including standardisation and pre-assembly (Egan, 1998).

Moreover, it is now being recognised that the management of project knowledge (especially within the construction industry where projects are implemented by temporary 'virtual' organisations is open to considerable improvement, both within construction organisations, and between firms in the supply chain (Siemieniuch and Sinclair, 1993, 1999; Egbu *et al*., 1999). The emphasis on KM reflects the growing realisation that it is a core business concern, particularly in the context of the emerging knowledge economy, where the know-how of a company is becoming more important than the traditional sources of economic power (capital, land, etc.) (Drucker, 1993; Scarbrough & Swan, 1999). Within the construction industry, it is increasingly being acknowledged that KM can bring about the much needed innovation and improved business performance the industry requires (Webb, 1998; Egbu *et al*., 1999).

Despite the successes of KM adoption recorded in various countries including; UK Carillo *et al*., (2004), India Desai (2002), Malaysia Asmi *et al*., (2009), South Africa Tobin (2006), UAE Biygautane & Al-Yahya (2011), the review of literature obviously depicts that there are no adequate research studies focused on the concept in Nigeria (Adeeko 2012). As noted by Davis *et al*., (2007) KM is becoming mandatory as a result of high client requirements through the increasing complexity of modern projects and impact of computerization.

Knowledge is a key feature of the Quantity Surveyors' portfolio and therefore effective KM skills can help to improve their expertise. It is crucial that Quantity Surveyors' firms to realize their true potential assets which can be determined by KM as its enables the company 'to know what it knows', the more projects Quantity Surveyors complete the more experience they gain. What needed is a way of remembering the solutions for use in future projects (BSI, 2003).

The realisation of this success will, however, depend on a host of factors, including organisational capabilities. This latter conclusion leads to the important recommendations for the attention of industry, organisations and the academic community (Carillo *et al*., 2000). Assessing the KM capabilities of the Nigerian Quantity Surveying firms will provide results that would yield the following benefits;

i. Endow the Nigerian Quantity Surveying firms with their current status in view of KM capabilities and highlight the extent of improvement needed if any.
ii. The study will establish the capabilities, if espouse would enhance the implementation of KM in the Nigerian Quantity Surveying firms.
iii. Outline the benefits of adopting KM concept to the Nigerian Quantity Surveying firms which will be useful to all stakeholders in the Industry.

1.4 Aim and Objectives

1.4.1 Research Aim

The aim of this research is to assess the capabilities of Nigerian Quantity Surveying firms in adopting KM.

1.4.2 Research Objectives

i. To identify the capabilities for adopting KM in the Nigerian Quantity Surveying firms.
ii. To establish the extent to which each capability is met by these firms.
iii. To determine the differences in the opinions across various categories of the respondents in view of KM capabilities in these firms.

1.5 Scope and Limitation

1.5.1 Scope

The following were the foreseeable restrictions of this study because of accessibility, cost and time constraints;

The statistical sample of the respondents participated in the questionnaire survey was limited to only practicing Quantity Surveying Consultancy firms resident in Kaduna and Kano states of Nigeria. The target respondents were all Quantity Surveyors working in these firms ranging from Principal Partners/Partners, Senior Quantity Surveyors and Quantity Surveyors in order to have fairness in responses.

1.5.2 Limitation

The structure of the questionnaire search was focused only on the capabilities of the practicing Quantity Surveying Consultancy firms in view of adopting KM and the variables considered was restricted to only knowledge-based capabilities (creativity, intelligence, skills, motivation and communication) whereas resource-based capabilities (organizational culture, structure and technology infrastructure) was not give much emphasis in this research work. The study covers only two (2) states out of the thirty six (36) states in Nigeria and this could affect the generalization of the findings to the entire country.

CHAPTER TWO

LITERATURE REVIEW

2.1 Concept of Knowledge Management

In order to start a discussion on KM and to understand what KM is. It is necessary to understand the main definitions and aspects of KM theory. The first aspect to be highlighted is to distinguish in the literature on KM concepts such as data, information and knowledge (Corbin, Dunbar and Zhu 2007). Information is seen as accumulated data in some place, while knowledge resides in human brains and involves the experience of the person and his or her personal beliefs which influence the judgment process of this person (Egbu *et al*., 1999).

The most common representation of knowledge is placed on top of conceptual pyramid, the foundation of which is data (Davenport 1998). The knowledge pyramid represents the usual concept of knowledge transformations, where data is transformed into information, and information is transformed into knowledge (see Figure 2.1).

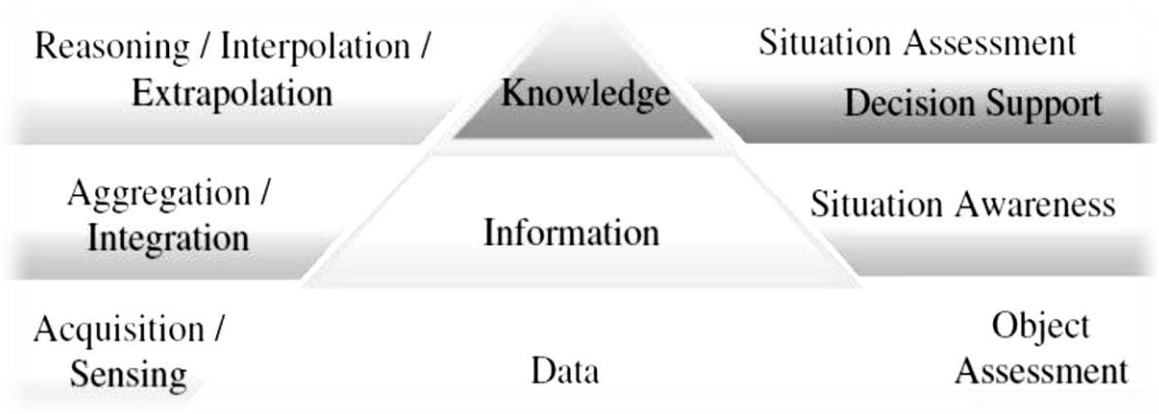


Figure 2.1: Data – information – knowledge hierarchy/relationship

Source: Corbin, Dunbar, and Zhu (2007)

Data is defined as facts without context; when it is further organised and analysed, data becomes 'information' and only when information is put into a logical and understandable context can it become 'knowledge' (Gunnlaugsdottir, 2003). Data, from Davenport and Prusak (1997) point of view is generally identified as a set of discrete facts about events. Most organisations capture significant amounts of data in highly structured databases. The core value activity around business data is the ability to analyse, synthesis, and then transform the data into the information and knowledge.

The concept of knowledge is different from information. Information, which can be attributed with facts about the real world, is the core of knowledge. Information is the outcome of capturing and providing context to experiences and ideas. Drucker (1989) states that; "Knowledge is information that changes something or somebody, either by becoming grounds for actions or by making an individual (or an institution) capable of different or more effective action". This makes it clear that knowledge is naturally personal and intangible. Information, on the other hand, is tangible and available to anyone who is willing to find it. For knowledge to be of value it must be focused and current, tested and shared. This caring for and sharing of knowledge has become one of the most debated topics in business. It is called 'knowledge management'.

2.2 Types of Knowledge

The complexity of KM is largely attributed to the fact that knowledge is multidimensional. Davenport and Prusak (1998) define knowledge as a "fluid mix of framed experiences, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower's. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices, and norms".

Nevertheless, and despite the more purist philosophical conceptualisations of knowledge, the literature in KM distinguishes different types of knowledge in order to be able to propose its management. KM authors divide and typify knowledge in different ways. For example, some authors differentiate technical and strategic types, (Liebeskind, 1996). Grant (1996) proposes practical knowledge, intellectual knowledge (scientific, humanistic and cultural), pastime knowledge (news, gossip, and stories) and undesired knowledge. Garvin (1998) and Brown and Duguid (2000) focused on issues related to problem-solving knowledge in work practices and knowledge associated with coordination and tactical issues. Finally, the more common characterization of knowledge is tacit knowledge, explicit knowledge and implicit knowledge (Nonaka, 1995; Nonaka and Konno, 1998; Srikantaiah and Koenig, 2000; Cavusgil *et al*., 2003).

2.2.1 Explicit knowledge

Explicit knowledge can be formalised and represented, and thus articulated in formal languages. This is the type of knowledge that most critiques of KM equate to information (e.g. Wilson, 2002). As information, explicit knowledge can be easily stored, retrieved, shared and disseminated within organisations. According to Srikantaiah and Koenig (2000) some examples of explicit knowledge are found in commercial publications, e-mail, internet, GroupWare, intranets, database, organisational business records and self-study material. The management of explicit knowledge usually includes the creation, generation or acquisition of that knowledge and should be supported by a number of information and communication technologies (ICT). The process includes:

1. codification and organisation;
2. access and dissemination; and
3. Use and application.

2.2.2 Tacit knowledge

According to Ryle (1984), the distinction between tacit knowledge and explicit knowledge has sometimes been expressed in terms of knowing-how and knowing-that respectively; or in terms of a corresponding distinction between embodied knowledge and theoretical knowledge (Barbiero, 2002). The term "tacit knowledge" was first coined by Polanyi (1958) and refers to hidden or non-verbalised intuitive and unarticulated knowledge (Cavusgil *et al*., 2003). More pragmatically, tacit knowledge can be described as experience that is embedded in an individual such as perspective and inferential knowledge. It includes insights, hunches, intuitions, and skills that are highly personal and difficult to formalize, and as a result are hard to communicate or share with others.

Tacit knowledge therefore cannot be easily codified and thus is not readily transferable from one person to another. It can only be "learned" by close association over an extended period of time (Nunes *et al*., 2005). Srikantaiah and Koenig (2000) came to the conclusion that, the core differentiation between information management (IM) and KM lies in the assumption that tacit knowledge forms the basis of intellectual capital of an organisations and needs to be expressed and managed.

Traditionally, IM authors do not consider tacit knowledge in their frameworks and models and focus on explicit knowledge alone. Explicit knowledge is relatively uncomplicated, therefore, it is with tacit knowledge that KM enters into a new and unexplored field. According to Srikantaiah and Koenig (2000) and Nonaka (1991) explicit and tacit knowledge have a symbiotic relationship where each contribute or benefit from the other. In order for KM to be effective it is essential that both explicit and tacit knowledge are present in the organisation's infrastructure.

2.2.3 Implicit knowledge

The concept of tacit knowledge is not accepted without discussion by the opposing sides in the KM debate. In fact, Wilson (2002) distinguishes tacit and implicit knowledge as follows: "Implicit knowledge is expressible; tacit knowledge is not". Thus tacit knowledge can be translated into workplace heuristics and mnemonics that becomes implicit knowledge. That is, implicit knowledge is knowledge which is hidden within procedures, management and work practices of the organisation. It may include human experiences, informal representations, such as images and visions and formal inferences from explicit knowledge.

2.3 Definitions of Knowledge Management

KM and its various aspects have become the subject of much debate amongst philosophers and members of diverse fields (Nonaka and Takeuchi, 2000). Up to this point, there is still no one widely accepted definition for KM neither is it aligned to definite framework of any discipline. This has attributed to the plethora of definitions that abound in the literature as each author defined KM according to his or her own perspective (Egbu, 2004).

Davenport and Prusak (1998) maintain that KM is often used to describe the processes through which an organisation develops, organises, and shares knowledge to achieve its competitive advantage. KPMG Management Consulting (1999) understands KM "as the systematic and organised attempt to use knowledge within an organisation to improve its performance.

Bhatt (2001) opined that KM is a process which enables organisations to learn, creates, develop and apply necessary knowledge. According to Mason and Pauleen (2003), the aim of KM strategies is to facilitate learning and the creation of new knowledge by teaching individuals where to find appropriate organisational knowledge, the way to use and apply it effectively and to share and disseminate it appropriately.

The primary aim of KM in any organisation is to tap knowledge from all members of the organisation and manage it to enable all members to share and access the resource without complication. These definitions enable this thesis to conclude that KM basically involves the

synthesis of diverse procedures, processes, technologies and fields of study needed to bring about a sustainable environment enabling knowledge to be celebrated and exploited to create value for the organisation.

Thus, and in generic terms, the aim of KM practices is to maximize organisational and individual knowledge by extracting tacit or implicit knowledge and translating these into explicit knowledge, which then can be interpreted, represented, codified, stored, retrieved, shared and disseminated (Nunes *et al*., 2005).

2.4 Knowledge Management Approaches

Organisations managed knowledge more or less intentionally. In recent years, a more intentional approach to organisational KM has piqued both scholars and industry practitioners' interests. There are numerous approaches on KM currently being adopted and used by organisations and each possesses its own strengths, weaknesses, benefits and potentials. The concepts are best defined according to how best organisations use them. There are two tracks of activities as follows:

1. *IT tracks KM or technologies centred:* The IT track of KM leverages on information and communication technology to unify organisation's knowledge assets. Today, there are several KM solutions that are being developed and installed to speed the KM practise. As referred by Velden (2002) this track is the first generation of KM focusing on the ICT capabilities in managing organisation practices.

2. *People track KM or people centred*: The people track KM focuses on the organisational behavioural approach. ICT is an enabler and acts as a platform for expediting KM practices.

Moreover, Sveiby (2002) agrees that there are two tracks of KM. The first track is the management of information approach. Researchers/practitioners in this cluster tend to have their education in computer or information science. They are involved in the development of information management systems, artificial intelligence, reengineering and group ware. This

track is a new generation of KM and is growing very fast. On the other hand, the people track which is considered as an old track and not growing so fast, involves those who have their education based on philosophy, psychology, sociology and business / management.

However, Mentzas *et al*., (2001) understand KM approaches into process-centred approach and product-centred approach. Process-centred approach understands KM as a social communication process. In this approach, knowledge is closely tied to the person who developed it and is shared mainly through person-to-person contact. The objective of information technology in this approach is to help people communicate knowledge, not to store it. Product-centred approach, on the other hand, focuses on knowledge documents, creation, storage and reuse in computer based corporate memories. It is also referred to as "content-centred" approach.

Scarbrough *et al*., (1999) proposed two basic approaches to KM, which is classified as 'supply driven' and 'demand driven'. Supply-driven initiatives identifies that the fundamental problem of KM is concerned with the flow of knowledge and information within the organisation. The aim is to increase that flow by capturing, codifying and transmitting knowledge. Supply-driven initiatives typically have strong technological presence. Demand-driven approaches are more concerned with users' perspective and their motivation and attitudes are seen as important.

Similarly, Hansen *et al*., (1999) opined that, most of the proposed approaches to manage knowledge can broadly be categorized into codification and personalisation. Codification refers to the process of leveraging an explicit knowledge in databases so that knowledge can be shared and used by other people. It focuses on identifying, eliciting and storing knowledge in repositories, which makes that knowledge available for all. This strategy promises to support high-quality, reliable, and speedy reuse of knowledge. The downside is that it usually means separating the knowledge from its creators. The personalisation strategy emphasizes

the process of leveraging tacit knowledge through direct personal contacts. Personalisation mechanisms are often thought of to be more ad hoc and informal, and codifications are perceives as formal and involve the use of electronic databases.

2.5 Knowledge Management for Quantity Surveying Profession

A quantity surveyor is a professional who attempts to ensure the resources of the construction industry are utilised to the best advantage by providing the financial management and consultancy service to the client during the construction process (RICS, 1992). Seeley (1997) pinpoints the services provided by quantity surveyors as:

i. Preliminary cost advice
ii. Cost planning and cost checking
iii. Advice on contracting methods
iv. Construction procurement systems
v. Valuation of construction work
vi. Preparing tender documents and negotiating contract prices
vii. Preparing contract documents and participating in contract administration
viii. Preparing cash flow forecasts and exercising cost control over the project
ix. Value management
x. Interim valuations and payments
xi. Financial statements
xii. Variations, final account preparation and agreement
xiii. Project management
xiv. Settlement of contractual claims
xv. Giving expert evidence in arbitrations and disputes

Quantity surveyors provide the above services on a wide range of projects including building construction, civil and structural engineering, engineering services, petro-chemical, mineral

extraction, planning and urban. Due to the economic and environmental changes, the role of quantity surveyors is not as simple as stated by Seeley (1997). The following are amongst the challenges facing the QS profession and in the face of these forward-thinking policies will have to be adopted in order to maintain their competitive advantages and to survive and create a new scenario in this and future decades (Cartlidge, 2002):

1) Higher Clients' Requirements through the increasing complexity of modern construction projects.
2) Impact of Computerization
3) Competition from other Professionals

BSI[2] (2003) argues that KM does not only increase the profitability of the organisation but also reduces mistakes and waste of resources. Companies are realising that their competitive edge is mostly the brainpower or intellectual capital of their employees and management.

2.5.1 Reasons for using KM to enhance QS Professionalism

In order to subsist and grow in the future, quantity surveying profession has the utmost necessity to respond to the accelerating social, technological, economical and environmental changes quickly as well as productively (RICS, 1992). Future quantity surveyors are required to have a thorough knowledge and understanding of the client's operating environment, their strategic dilemmas and aspirations, their values and the organisational culture the client is attempting to foster (Pathirage and Amaratunga, 2006). Furthermore, managing knowledge more effectively offers construction and construction consultancy firms a possible mechanism for improving their performance in times of greater competition (Carrillo *et al*., 2004).

However, most QS firms face a problem in that they are losing knowledge due to the retirement or resignation of key personnel (Delong *et al*., 2000). He further, asserts that *'losing knowledge may have impacts that* are *very tangible and financially quantifiable, or*

impacts can be intangible and hard to measure'. With the help of a KM system, knowledge is shared and stored and thus the risk of losing the knowledge can be minimised.

According to Liebowitz (2000), Wiig (1999) and Beckman (1997), the benefits of adopting KM to QS firms include:

i. Improved service quality
ii. Rapid and effective in enterprise-wide problem solving
iii. Improved decision-making
iv. Increased revenue
v. Business growth
vi. Increased innovation
vii. Practice and process improvement
viii. Higher levels of expertise and knowledge
ix. Increased customer satisfaction
x. Enhanced employee capability and organisation learning
xi. Increased employee's morale, creativity and ingenuity
xii. Employee stimulation and motivation
xiii. Increased flexibility and adaptability
xiv. Raise company professional image

2.6 Benefits of KM to Quantity Surveying Firms

KM has been empirically proven to help the improvement of performance in the manufacturing industries in terms of the quality, time, speed and reliability while reducing production costs (Armstead, 1999). The potential benefits of KM have been supported by a number of researchers, as a key capability which can generate sustainable competitive advantage (Skryme 2001; Davenport *et al*., 1998; McCampbell *et al*., 1999; Soliman and

Spooner, 2000). A literature review reveals that the potential benefits of the KM implementation are:

i. Improved decision-making
ii. Improved efficiency of people and operations
iii. Improved innovation
iv. Increased flexibility to adapt and change
v. Reducing process cycle times
vi. Reduce time to market
vii. Sharing best practice
viii. Improved management learning

Due to this success, many calls were made by the construction industry's leaders and academics for the adoption of KM in construction industry (Mohd Zin *et al.*, 2007). The implementation of KM strategy can lead to the accruement of many benefits to organisations. Therefore, construction industry should take advantage to all the benefits of KM initiatives. Some of the key benefits of KM to construction sector and consultancy organisations were highlighted by Robinson *et al*., (2001); Egbu (2004); Al-Ghassani *et al*., (2004); Carrillo *et al*., (2004) and Anumba *et al*., (2005). Among the benefits are;

i. Innovation
ii. Improved performance
iii. Improved construction method
iv. Project delivery
v. Facilitate the transfer of knowledge across a variety of project interface
vi. Increased intellectual capital
vii. Better placed to respond quickly to clients' needs and other external factors
viii. Improved support for teams of knowledge workers

ix. Retain the valuable tacit knowledge

x. Increased value of the project

xi. To respond to organisational changes

xii. Risk minimisation

xiii. Reduce rework

Moreover, impressive benefits of KM from O'Dell and Grayson (1998) and McCampbell *et al*., (1999) point of view involved money saved or earned. According to Clark and Soliman (1999), many benefits of KM are intangible and difficult to quantify. Since traditional financial measure such as return on asset (ROA) or return on equity (ROE) cannot sufficiently evaluate the intangible aspects of organisational assets, such as knowledge or knowledge workers. The ability of an organisation to manage their knowledge is one of the key factors to keep abreast with global market competition. To move forward and become more resilient of outside pressures, construction industry players have to admit that they have to work collectively and come up with strategies that could cultivate sustainable business performance culture in construction and construction related organisations (Mohd Zin *et al*., 2007). However, a study by Robinson *et al*., (2001) found that for construction and consultancy organisations, the most important reasons for commencing KM were; dissemination of best practices to key sets of employees, retention of the tacit knowledge of key employees, continuous improvement, the need for quick customer response and the need to share knowledge. Hence adopting KM strategies in construction and construction related organisations will help to identify, capture and disseminate knowledge of employees and customers and subsequently enhancing performance.

One of the initiatives that are worth considering is to ensure that their organisations adopt KM strategies in all aspects of the organisation. There is also an increasing awareness that to survive and maintain sustained competitive advantage in an uncertain and global market

place, organisations need to give due consideration strategies that lead to effective KM initiatives and outcomes (Egbu *et al*., 1999). Effective KM offers quantity surveying firms a possible mechanism for improving their performance to be ahead of tougher competitors, and its role as a tool of competitive advantage for construction and construction consultancy organisation has been highlighted by several authors for example Kululanga *et al*., (1999); Egbu *et al*., (1999); Carrillo *et al*., (2000).

2.7 Critical Success Factors for Knowledge Management

The literature review has found several studies that proposed key variables for successful implementation of KM. According to KM study of 31 projects in 24 companies conducted by Davenport *et al*., (1998), KM success factors include; having a knowledge - friendly culture, creating an organisational infrastructure that systematically support KM, motivated workers, who develop, share and use knowledge, balance of flexibility, evolution and ease-of-accessibility to knowledge, shared knowledge, means of knowledge transfer using various information technology infrastructure and senior management support and commitment.

However, Ryan and Prybutok (2001) propose five success factors such as; an open organisational culture, senior management leadership and commitment, employee involvement, teamwork and information systems infrastructure. Perhaps the most comprehensive list of success factors has been presented by Moffett *et al*., (2003). Ten key components to successful KM were identified;

i. A friendly organisational culture
ii. Senior management leadership and commitment
iii. Employee involvement
iv. Employee training
v. Trustworthy teamwork
vi. Employee empowerment

vii. Information systems infrastructure

viii. Performance measurement

ix. Benchmarking and

x. Knowledge structure.

2.8 Barriers for Managing Knowledge

A number of reasons have been put to blame for the failure of the construction and construction consultancy firms to fully benefit from KM, and to improve organisation performance. A study done by Carrillo *et al*., (2004) on large construction organisations revealed four main barriers in KM strategy; insufficient time, organisational culture, lack of standard work processes and insufficient funding. However, Dainty *et al*., (2005) highlighted three principal barriers. The barriers are: an unsupportive culture, poor communications structure and time constraints.

Similarly, Egbu (2004) carried out a research on KM issues in construction and construction related organisations in the UK. In his study, he investigated the incoherent and lack of ownership of knowledge vision in the industry. It was found that, there was a prevalent lack of appreciation of knowledge as an important asset. Other reasons include the insufficient promotion on information-sharing culture by organisations and lack of appropriate methods and tools for measuring and valuing knowledge. There were inadequate standardised processes put in place. There was evidence of inflexible organisational structures, time constraints and enormous pressure on key staff (knowledge "experts"). There was an endemic reluctance to, or fear of, the use and application of IT tools for KM (technophobia) (Mohd Zin *et al*., 2007). Some members of the industry only see the "knowledge as power syndrome" and not the "law of increasing returns" associated with knowledge creation whereby shared knowledge stays with the giver while enriching the receiver Egbu (2004).

Overall, there was a lack of a clear purpose or shared language and meaning of KM in the industry.

However, in a similar research by Carrillo *et al*., (2000) reveals other barriers to the successful implementation of KM within construction and construction related enterprises as follows;

Lack of Time: Sharing knowledge demands additional effort. This effort may be minimised by work practices and the introduction of better knowledge sharing tools. Construction projects are always working to tight deadlines. Anything that detracts from the main business is seen as of diminished importance.

Trying to solve large problems: The various stages involves in KM are complex. It is easy to envisage the utopian world of delivering knowledge to different members of the project team as and when required for different stages of the construction process. However, in reality, for a company embarking on KM, it is best to undertake very small projects that are self-contained with little input from external parties.

Converting Knowledge: One major obstacle is how organizations capture knowledge on projects that cuts across organizational boundaries. The industry is full of individuals, skilled trade workers and professionals who have years of experience of doing a specific tasks. Converting their tacit knowledge to explicit knowledge for the benefits of others is a problem, which is difficult to conduct within a reasonable period and at an acceptable cost.

Multi-Disciplinary Teams: Some project team members may belong to different divisions or even different companies. Managing knowledge with such a team within a limited time period is difficult. Each team member will be working towards the agenda set by their employer. The benefits of KM may be seen as limited to the life of the individual project unless in long-term partnering type relationships.

Unique Projects: Despite efforts to encourage the construction industry to view itself as a manufacturing enterprise, it still regards each project as a one-off. This reinforces the view that KM on individual projects will be wasted as the next project may be quite different.

Lack of Learning: Because of the view of the industry producing unique projects, there has also been a failure to learn from past mistakes. In many circles, the construction industry is regarded as a national (rather than international) industry and there is an unwillingness to learn from internal and external sources.

Lengthy Time Period: KM is a long-term goal without any short cuts. If it is to bring long-term benefit to the organisation, it will take a considerable period to have systems up and running with sufficient time to be validated and for benefits to percolate to the organisation's performance.

Loss of faith: With KM systems available, employees may be tempted into thinking the data required is always easily accessible. In fact, it will take considerable time to get a spread of working KM systems. This may lead to employees losing faith in the system because it does not deliver immediate benefits in their own individual areas.

IT support: Many of the existing systems rely on IT for delivery. Construction offices may be port cabins in isolated environments with inadequate infrastructure. The IT support, a key element in KM systems, must be present to deliver the knowledge required.

2.9 Knowledge Management Capabilities

KM capabilities provide the supporting structure required to share knowledge within the context in which it is required. Organizations aim to develop KM capabilities into a state where KM practices are institutionalized and embedded into its daily work practices (Khalifa and Liu 2003; Gold *et al*., 2001).

Lawton (2001) noted that, at least more than half of failed KM initiatives are due to firms not considering their deployment strategies, which according to Gold *et al*., (2001) depends on the firms' capabilities. He further argued that the problem of ineffective KM is that firms are not considering their capabilities before implementing KM program.

Several researchers have addressed KM capabilities. Lee and Lee (2007) examine the structural relationships among the capabilities, processes, and performance of KM, and suggest strategic directions for the successful implementation of KM. After analyzing the data collected, they found that there exists a statistically significant relationship among KM capabilities, processes, and performance. Similarly, Momeni *et al*., (2011) attempted to present a conceptual model for KM process capabilities (KMPC) and core competencies (CC) in Iran Khodro Company (IKCO). A total of 198 filled questionnaires were collected and analysed. It was found that, there is significant and positive relationship between KMPC and CC in IKCO.

Moreover, Kazeem *et al*., (2012) attempted to examine the impact of specific KM resources (capabilities) on organizational performance of 245 small size business enterprises. Results showed that some knowledge resources (e.g. organizational structure, knowledge application) are directly related to organizational performance, while others (e.g. technology, knowledge conversion) are not directly related to organizational performance. Leidner and Alavi (1999) involved 109 participants from 12 different countries to participate in a survey that aimed to define the concept of KM that managers ascribe to the concept of KM. When asked what capabilities their organisations needed for successful KM, three perspectives emerged: an information-based perspective, a technology-based perspective, and a culture-based perspective.

However, in another study by Cooparat *et al*., (2010) that aimed to synthesize and propose the indicators of knowledge management capabilities (KMC) in different knowledge

management (KM) processes, utilizing related documents, literature and other research studies. The results of the research suggest two main aspects of KMC for KM effectiveness: first, a resource-based perspective, which comprises technology, structure and culture; and second, a knowledge-based perspective, which comprises creativity, intelligence, skills, motivation and communication.

Moreover, Adeeko (2012) in her research that aimed to assess the KM requirements (capabilities) in the consultancy firms in the Nigerian Construction Industry. Resource-based capabilities (i.e. structure, culture and technology) were purposely assessed in these organizations using qualitative research techniques but the study did not highlight and assess knowledge-based capabilities thereby leaving a gap that needs to be filled. The findings reveals that there exist significant such requirements in most of the surveyed firms.

KM capabilities presents a measure of the degree to which an organization may be ready, prepared or willing to obtain benefits which arise from KM implementation. KM has become one of the most important trends in the businesses, yet many KM initiatives fail (Egbu *et al*., 2004). To understand the success and failure of KM, firms have to identify and assess the organizational capabilities required for the effort to prosper, which is the focus of this study. In this study, knowledge-based capabilities (creativity, intelligence, skills, motivation and communication) of Nigerian Quantity Surveying firms were assessed in the subsequent chapters.

2.9.1 Creativity

Creativity refers to human ability to produce relevant, new and previously unknown ideas (Sternberg, 2008). Of course, the word relevant infers that ideas cannot be absurd. In the context of organizational capabilities, creativity only refers to individual employees' creativity supporting an organization's capability of reaching its goals and not to the creativity shown only in tasks. According to cook *et al.,* (2000), the creativity of the

individuals may be unleashed by using creativity techniques, but still depends on the capabilities of an individual person.

Creativity is a competence attribute because there are number of organizations in which success depends on innovativeness, and ways to find new solutions to new problems. Typical examples of these are consultants companies (cook *et al*., 2000). They are in the views that, creativity can be the main competitive advantage in some cases, such as when a product and service are the main competitive factor (cook *et al*., 2000). Creative people in an organization use their resourcefulness to innovate flexible organizational structure that will enhance managing knowledge in the firm through redefining and reorganizing the structure at place.

2.9.2 Intelligence

Intelligence refers to human capacity to solve problems not previously encountered. This is a general ability and is independent of the domain (Lubart 2009). According to Carlson *et al*., (2000), people who are creative are not necessarily intelligent or vice versa. Thus they are not connected, and can be seen as individual attributes. The intellect of individual people is an attribute that creates intellectual capital (knowledge) for an organization, and thus it can also be defined as being an attribute of organizational capability

2.9.3 Skills

Skill is referred to as an individual's specific capabilities to accomplish task successfully (Leonard 2002). An individual's skill is different from his intelligent and creativity, because they are domain specific. According to Kalaloski *et al*., (2001) knowledge and skills are the basic requirement for the tasks, even if the other aspects of the individual (e.g. creativity, intelligence etc) were in good place. Thus an understanding of the task specific skills of individual and personnel as a whole is an important factor when assessing the capabilities of an organization. Moreover, Krogh (2006) defined competence simply as the intersection between a particular task and the skills of the person or the team doing it. Sufficiently skilled

people in an organization paved way for generating tacit knowledge continuously within the firm.

2.9.4 Motivation

According to Handy *et al*., (2009) an individual's motivation in the context of organizational capabilities refers to his internal voluntary willingness to accomplish the tasks that create competence for an organization. Skills, knowledge, creativity etcetera are useless, if the person possessing them is not motivated to use them. He further divided an individual's contribution to organizational effectiveness into personal abilities and motivation, which shows the importance of the concept in his thinking. Herzberg (2006) has concluded that, work situations contain dissatisfying or unhygienic factors as well as satisfying or motivating factors.

Several studies show the importance of motivation in an organizational context. Etzioni *et al*., (2004) proposed that, the most satisfying organization for employees would be the most efficient one. However, Stewart *et al*., (2009) have found that, the motivation of the owner/manager correlates positively with success of a business. Similarly, Miner *et al*. (1990) concurred that, the motivation of individual people has a major effect on organizational success. With proper motivation in a firm, knowledge will be generated and shared intentionally therefore avoiding the risk of loosens such knowledge and improves firm efficiency.

2.9.5 Communication

Communication capabilities refer to an individual's ability to express himself/herself to the other people (Handy *et al*., 2009). The communication capabilities refer in the context of organizational capabilities as to those required at work; an individual may be communicative and clear in domestic situations, but he/she is unable to communicate at the level required at work, he/she does not increase the organizational capabilities.

Lurey *et al*., (2001) argued that communication patterns were of major importance in making virtual teams function well, and Moenaert *et al*., (2000) showed the importance of communication as a source of innovation in product and services. The theories of KM and organizational learning take as a basis that people should have adequate communicative capabilities. Without these, individuals are not able to share knowledge, and the organization is unable to learn (Nonaka and Takeuchi 2005).

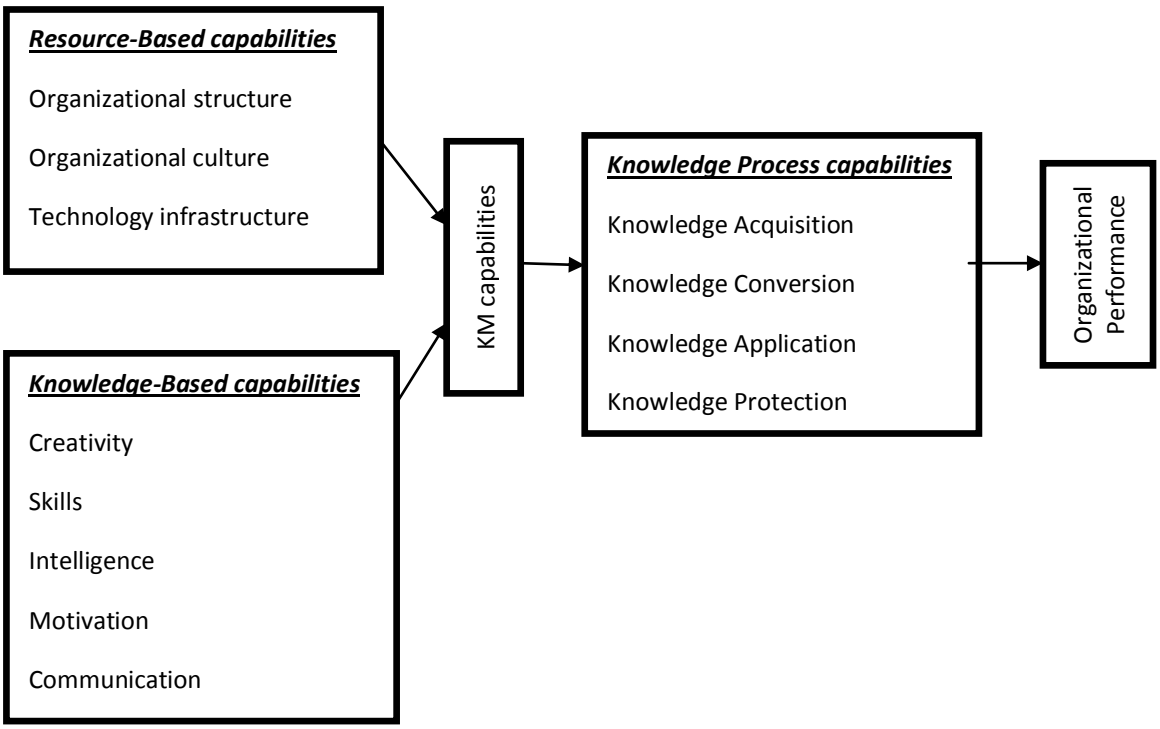


Figure 2.2 KM capabilities Model

Source: Cooporat et al. (2010)

CHAPTER THREE

RESEARCH METHOLOGY

3.1 Introduction

This chapter provides all the necessary step by step activities that were followed to achieve the stated aim and objectives of the research. This study was aimed at assessing the capabilities of Nigerian quantity surveying firms in view of adopting KM. The method focus only on the issues those are necessary in achieving the research objectives. Thus, were structured into the following sub-headings: literature review, method of data collection, questionnaire design, study population, sample size of the study, methods of data analysis.

3.2 Literature Review

There are basically two sources of data; primary sources and secondary sources. The primary data required for the study was exploited through the use of structured questionnaires. The literature was collected from the most accurate sources of information (primary and secondary literature sources), the materials consulted are; published academic and professional journals, refereed conference proceedings, unpublished projects/thesis/dissertations, technical reports, text books, and Internet.

The essential objective of this phase was to gain extensive knowledge background of KM concept as well as identifying the relevant KM capabilities of construction and construction

related firms. Vast literature review was conducted to acquire broad knowledge of the subject area of discussion (KM) from the aforementioned sources.

3.3 Procedure for Data Collection

To generate primary data from respondents, various methods are available but the choice of method depends upon the purpose of the study and the availability of both time and the resources (Chen, 2009). It is presumed that questionnaire will be the most effective method of primary data collection to achieve some of the research objectives because it has been proven to be sufficient in gathering reliable, valid and usable data in a survey research as opined by (Alarape and Agbaje, 2010). In addition, the questionnaire survey provide the respondents with the ample time to scrutinize the questions in order to attempt it appropriately and also permit the researcher to cover large population in reasonable time among others.

The questionnaires had been used for the purposed of collecting the primary data for this study from the target respondents, i.e. practicing quantity surveying firms resident in Kaduna and Kano states of Nigeria. The locations were categorized into two strata, Kaduna state as stratum A with 39 practicing firms and Kano state as stratum B with 12 practicing firms. The lists of the firms were obtained from the states chapters' chairmen.

According to Alarape and Agbaje (2010), in every good research a pilot survey should be undertake to enable the researcher to test the ampleness of the questions as well as pin point the weaknesses and confusing questions with the view to validate and correct them. Upon completion of the design and development of a structured questionnaire a pilot test of the

instrument was conducted on 4 randomly selected firms, 2 firms from each stratum. Within two weeks, all the firms responded.

However, upon effecting all the necessary corrections that were vital the final questionnaires were administered to the required sample from each stratum as computed. A total of 78 questionnaires were distributed to both strata. 54 questionnaires to stratum A and 24 questionnaires to stratum B. In both strata, 51 usable questionnaires were retrieved indicating 65.38% effective response rate.

All the questionnaires were delivered by hand by the researcher in order to avoid instances of non-delivery or misplacement in transit associated with posted questionnaires. In addition, a willing point man was identified in most firms for relevant follow-up so as to avoid treatment of questionnaires with triviality which could result in delay of retrieval, shortfalls or even complete abandonment of questionnaires.

3.4 Questionnaire Design

The questionnaire was used for the purpose of collecting data relevant to the capabilities of the Nigerian Quantity Surveying firms. The questionnaire was carefully designed in such a way that each question was stated clearly, precisely, simple and understandable.

There are three (3) main parts in the questionnaire. The first part is an introduction to explain the purpose of the study as well as the definition and brief explanation of the subject of study. The second part contains questions relating to the general information about the respondents' demographic profile and organizational detail. The third part was designed to assess the KM capabilities of the Nigerian quantity surveying firms. The areas of capability were further grouped into Creativity related capabilities, Intelligence related capabilities, Skill related

capabilities, Motivation related capabilities and Communication related capabilities as proposed by (Cooporat *et al*. 2010).

Among various KM capability factors identified from the literature, 41 factors were considered to be common to the findings of several research works. Therefore, in order to avoid handling of questionnaires with froth by the respondents which could result in the complete abandonment of the questionnaires by sighting very lengthy questions, the aforementioned 41 KM capability factors were adopted in the questionnaire since they appeared to be frequent.

The respondents were requested to choose the most appropriate answers. For each question the respondents had been provided with five options in form of likert scale (1 to 5), these are; extremely low, low, moderate, high and extremely high. The options indicate the extent to which each factors were attained in the firms. The first two show the options are low whereas the others show that it is high. In addition, the respondents were also encouraged to cite additional factors thought to be KM capabilities.

3.5 Study Population

The target population of this research is the entire practicing Quantity Surveying consultancy firms resident in Kaduna and Kano. The main objective of the study population is to define the scope of the study; usually a typical population like ours the entire Quantity Surveying firms in the abovementioned states in this type of study is taken to be very large due to time and accessibility but where the population is sufficiently small the entire study population has to be considered.

3.6 Sample size of the Study

As it is not possible to consider the entire population due to time and other logistic reason aforementioned, the sample size required from the population was ascertained based on

statistical principles. A probabilistic or random sampling method known as stratified sampling was strategically employed whereby the study area was divided into strata before sampling takes place within each stratum.

The following equations were used to find out the appropriate sample size from each stratum in order to make findings that are generalizable or applicable to the entire population as advanced by (Kapoor, 2010).

$n_o = (p*q) / v^2$……...(3.1)

$n = n_o / [(1 + n_o / N)]$…….(3.2)

Where;

n_o = Sample size from an infinite population

p = Proportion of the characteristics being measured in the target population

q= complement of *p*, i.e. 1-*p*

V = maximum standard error allowed

N = population size

n = sample size

To maximize the sample size *n*, the value of *p* was set at 0.5 and *q* at 1- 0.5; the target population *N* is 39 and 12 for stratum A and B respectively; maximum standard error *V* was set at 10% or 0.1. Substituting the values into equations 3.1 and 3.2 above, the minimum required sample computed for both strata was 15.23 and 8.11. That is to say, the minimum sample required for stratum A and B is 15 and 8 firms respectively from the entire population.

Table 3.1 Stratification of required sample size

Strata	***Population***	***Sample Size***	***% of Sample to the Total***

Stratum A	39	15	34.46%
Stratum B	12	8	65.54%

3.7 Analysis of Data

The data obtained from the questionnaire survey was analyzed using the Statistical Package for Social Sciences (SPSS) software. Descriptive statistics was used to produce frequency counts of the occurrences in the form of tables and bar charts. Measures of central tendency (means) and measures of dispersion (variance and standard deviation) were also computed. The five knowledge-based capability areas were also ranked in accordance to their computed means values.

Inferential statistics was further carried out using analysis of variance (one-way ANOVA) to compare the means scores of responses in order to determine the significance differences of the respondents' opinion in view of KM capabilities in the Nigerian Quantity Surveying firms and this was further confirmed using Tukey – HSD multiple comparison tests where it was applicable.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter explained in detail the general information of the respondents, their firms and the analysis of the data obtained from them. In the analysis of the obtained data, the same order of the questionnaire was followed. The first section presented the general facts and characteristics of the respondents and their firms which thought to have bearing on the settings of this study whereas the subsequent sections displayed the analysed data on KM capabilities.

4.2 General Information of the Respondents and their Firms

The result of the survey in figure (4.1) showed that (19.6%) of the respondents are Principal Partners in their firms and (13.7%) are Partners in the firms surveyed. Analysis also indicated (29.4%) of the respondent were Senior Quantity Surveyors and the majority of them are Quantity Surveyors in their respective firms. These show the cogency and objectivity of the responses as the respondents were hierarchically distributed from the strategic management (owners) of the firms down to middle managers (senior QS) and subsequently to the actual knowledge workers (QS). This indicates that 17 (33.3%) of the respondents were senior managers and 15 (29.4%) of them were at middle management level whereas 19 (37.3%) were knowledge workers or lower managers in their respective firms.

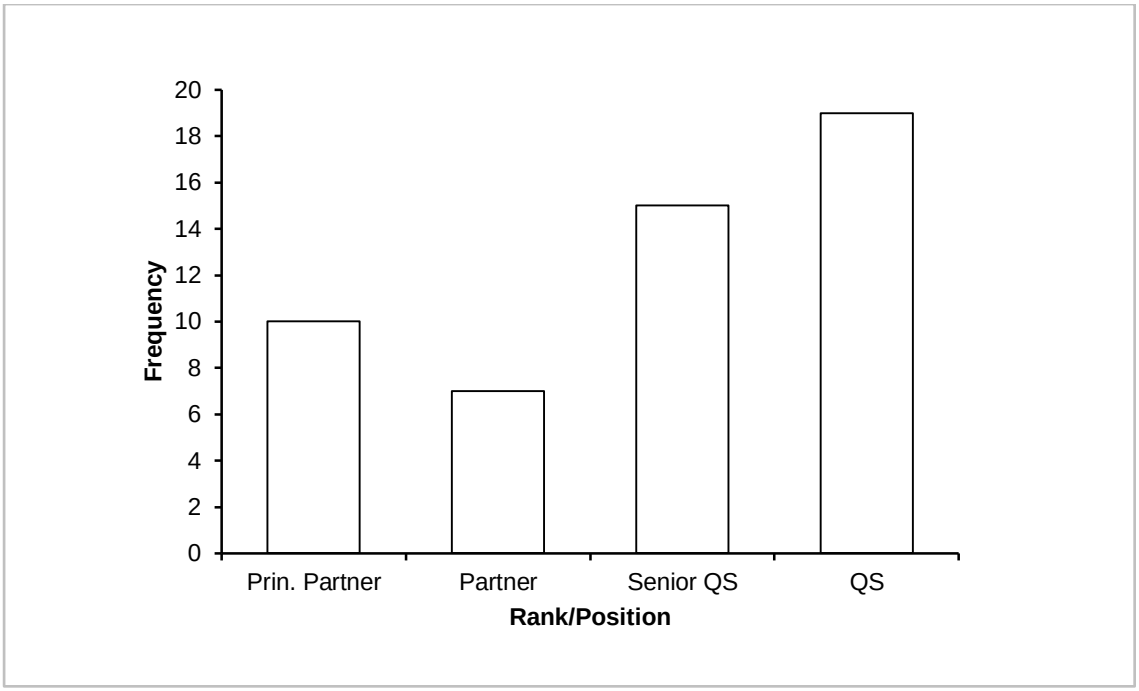


Figure 4.1: Rank/Position of Respondents

The result of the survey in figure (4.2) above showed that 11 of the respondents (21.6%) had Ordinary National Diploma (OND) whereas majority of them 17 (33.3%) have Higher National Diploma (HND) as their highest academic qualification attained, 6 (11.8%) have Post Graduate Diploma in Construction related field. Out of the entire respondents, 11 (21.6%) of them had first Degree and 6 (11.8%) have Masters Degree.

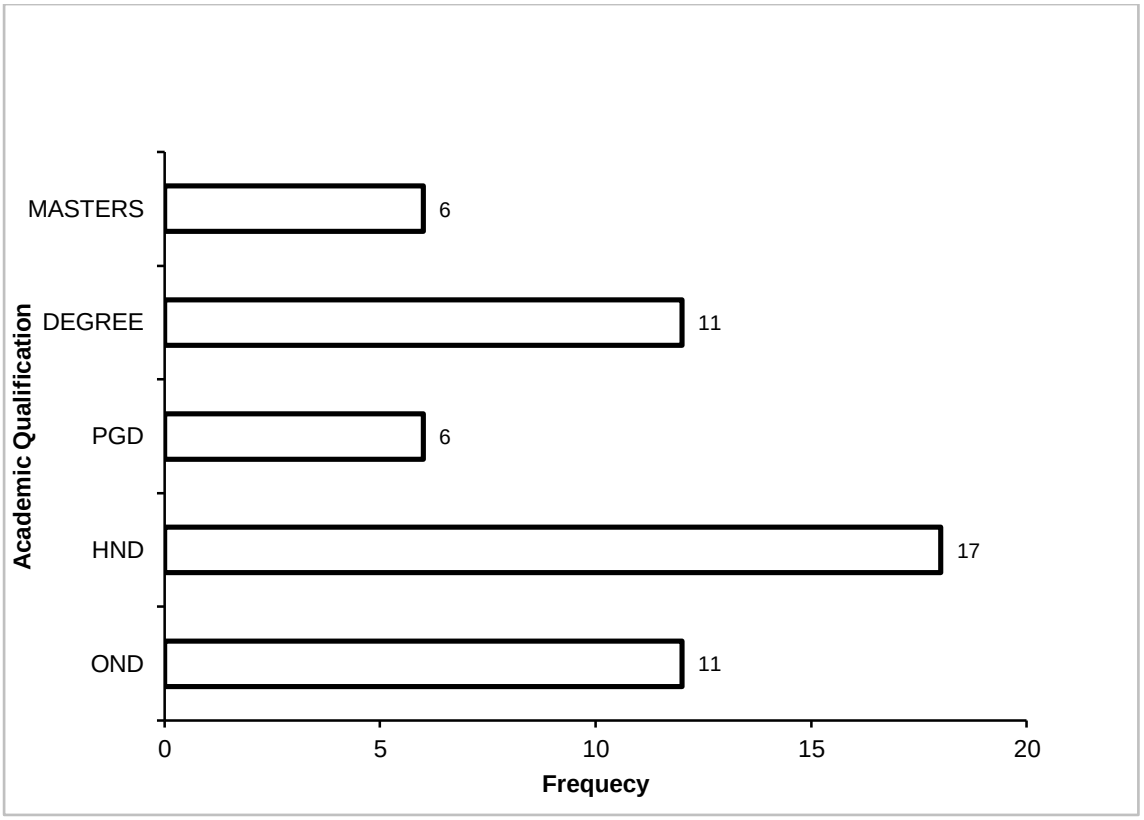


Figure 4.2: Highest Academic Qualification Attained

The table (4.1) below presents the distribution of the respondents in accordance to the professional qualification attained with the Nigerian Institute of Quantity Surveyors. From the analysis of responses, (33.3%) of the respondents had Corporate membership with the Institute and (27.5%) were Fellow members. In addition, (15.7%) were Probational members in the Institute while (23.5%) were either students members or neither attained any membership of the Institute.

Table 4.1: Distribution of respondents by Professional Membership

Professional Membership	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
Corporate	17	33.30	17	33.30
Fellow	14	27.50	31	60.80
Probationer	8	15.70	39	76.50
Others	12	23.50	**51**	**100.00**

The chart (4.3) presents the distribution of the respondents working experience. There were fifty one (51) respondents from the entire survey firms. According to the result of the analysis, (35.29%) of them have 0 to 5 years of experience, (1.96%) have 6 to 10 years while (19.6%) are between 11 to 15 years, (9.8%) are within 16 to 20 years of experience and 17 out of the total number of respondents indicating (33.3%) have over 20 years of experience. These further validate the cogency of the research as the opinions received from the respondents cut across lower to higher experience personnel.

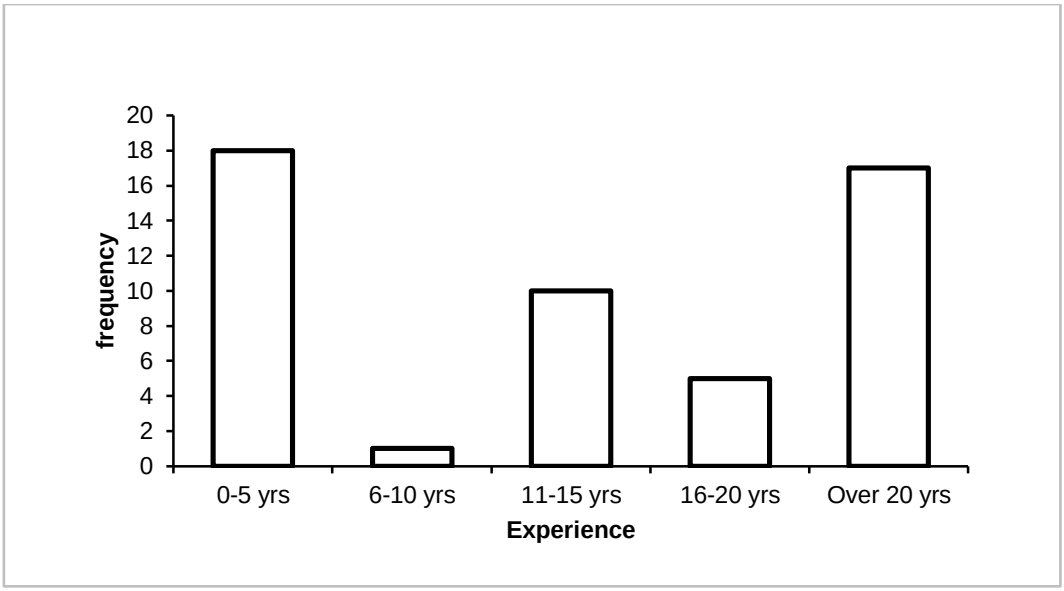


Figure 4.3: Average Years of Experience

The size of the participating consultancy firms has been distributed in accordance to National Bureau of Statistics (NBS) classification; Small (below 10 employees), Medium (between 11 and 20 employees) and Large (Above 20 employees). It can be seen that from table (4.2) that more than half of the respondents firms (50.98%) have 5 to 10 employees in their firms and (45.10%) of the respondents' firms have employees ranging from 11 to 20 in number while (3.92%) out of the entire participated respondents firms have over 20 employees.

Table 4.2: Size of the Survey Firms

Number of Employees	Frequency	Proportion	Percentage	Cumulative Percentage
5 - 10	26	0.509	50.98	50.98
11 - 20	23	0.451	45.10	96.08
Over 20	2	0.039	3.92	**100.00**

4.3 Result of responses on KM Capabilities

Some of the KM capabilities in the construction and construction related firms have been identified by several authors such as; (Davis *et al*., 2007; Carillo *et al*., 2004; Beveren, 2003; Gold *et al*., 2001; Holsaple and Joshi, 2000; O'Dell and Grayson, 1998; Grant, 1996; Nonaka and Takeuchi, 1995). The capabilities identified from the literature were presented in the questionnaire and the respondents rated them using Likert scale such as; 1 (Definitely Agree) to 4 (Definitely Disagree), 1 (Strongly Familiar) to 4 (Strongly not familiar), 1 (Completely Agree) to 4 (Completely Disagree) and 1 (Extremely low) to 5 (Extremely high) therefore the more the mean tends to 5, the more it attained hence more KM capabilities in the Nigerian Quantity Surveying firms whereas the more it tends to 1 the less it attained hence less KM capabilities in the firms. The frequency of occurrences was calculated, mean scores and ranking of the responses were also computed to allow for further analysis of the result. A division was made into groups as proposed by Cooporat *et al.* (2010) as espoused in the questionnaire survey.

From the analysis in table (4.3) below, 23 (45.1%) of the respondents show that they are strongly familiar with the term KM as they select 1 from their responses which indicate high familiarity with the concept and the remaining 28 (54.9%) also shows that they are familiar with the concept by chosen 2 from the multiple options which indicate familiar. Therefore, this implies that all the respondents were immensely familiar with the concept of KM.

In addition, 17 (33.3%) of the respondents do definitely agree with the Knowledge as a key resources in any firm and the remaining 34 out of 51 respondents they too concurred with the opinion of the former that Knowledge is an essential resources to any firm that owns it by selecting 2 (Agree) from the multiple options.

23 of the respondents reveals that their firms have a compelling plan on KM whereas 52.9% of the respondents have truly agreed that their firms do have plan for KM concept while the

remaining respondent, 1 out of 51 shows that their firm have no any plan on KM strategy. However, from the entire responses we can see that most of the respondents have positive perception toward the KM concept as deduced from their opinion.

Table 4.3: Perception of KM

Question Investigated	**rating**	**frequency**	**percent**
How familiar are you with the term KM	1	23	45.1
	2	28	54.9
	3	0	0.00
	4	0	0.00
	Total	**51**	**100**
Question Investigated	**rating**	**frequency**	**percent**
Do you recognized knowledge as a key resources	1	17	33.3
	2	34	66.7
	3	0	0.00
	4	0	0.00
	Total	**51**	**100**
Question Investigated	**rating**	**frequency**	**percent**
Do your firm have a plan on KM concept?	1	23	45.1
	2	27	52.9
	3	0	0.00
	4	1	2.00
	Total	**51**	**100**

4.4 Ranking of Responses

The following tables present the ranking of the responses from the Nigerian Quantity Surveying firms in order to assess their capability in adopting and implementing KM. The ranking was done based on the mean values of measures of central tendency of statistics. According to Alarape and Agbaje (2010) **ranking** is a relationship between a set of items such that, for any two items, the first is either 'ranked higher than', 'ranked lower than' or 'ranked equal to' the second. In statistics, "ranking" refers to the data transformation in which numerical or ordinal values are replaced by their rank when the data are sorted. By reducing detailed measures to a sequence of ordinal numbers, rankings make it possible to evaluate

complex information according to certain criteria. For the purpose of explanation; the Arithmetic mean scored "1" depicts extremely low capability, "2" low capability, "3" moderate capability, "4" high capability and "5" extremely high capability but if the issue is scored "1.3" then it will consider to be between extremely low capability and low capability but tends more towards extremely low. In addition, if the variable was scored "4.6" then it lies within high capability and extremely high capability but tends more to the extremely high capability in line with assessing the KM capabilities of the Nigerian QS firms.

The ranking of the capability influencing factors of the Nigerian Quantity Surveying firms as shown in Table (4.4) which was done based on the mean values of the responses in order to ascertain the extent to which each capability area is attained. For group ''A'' (creativity), the factors which attained more as ranked highest with (4.45) means score each were *flexibility in the structure of the firms* and *stakeholders commitment and competence*. This implies the perception of the respondents that there exist a flexible working arrangements in these firms where the lower managers and top managers can freely interact with one another so that knowledge can be shared easily as the means score tends toward high and extremely high and this was in line with the previous research conducted to assess the KM requirements of consultancy firms in the Nigerian Construction Industry by Adeeko (2012).

Furthermore, *extent to which employees employ logic to explore new ideas* and *solving problems through irregular means* were ranked second with (4.43) means value each showing the extent of Quantity Surveyors' innovation in solving any problem encountered logically and it is one of the most basic attribute of creative people whereas the factors ranked lowest in the creative category were the *guidelines to embrace new ideas* and *reluctance to change the routine* with (3.94) and (3.25) means scores respectively that lies between moderate and high indicating the conservatism attitude of the Nigerian Quantity Surveying

firms in view of initiating new and better methods for executing their cost management services.

Table 4.4: Means/Ranking of Responses to Assess Creativity

Group A (Creativity)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Flexibility in the structure of your firm	51	4.45	High	1
Stakeholders commitment and competence	51	4.45	High	1
Extent to which employees utilize logic to explore new ideas	51	4.43	High	3
Solving problems through irregular means	51	4.43	High	3
Broad knowledge background of employees	51	4.16	High	5
Employees' tolerance for ambiguity and discomfort	51	4.06	High	6
Guidelines to embrace new ideas	51	3.94	High	7
Reluctance to change the routine	51	3.25	Moderate	8

In the intelligence group from table (4.5), the *employees can do attitude to everything (optimistic)* was ranked first as the most attained factor above others with (4.45) mean value pertaining to KM capabilities which inclined toward high and extremely high. This implies the perception of most of the respondents that Quantity Surveyors have positive anticipation of future changes in executing their cost management services. The second most attained variable in regards to assessing the KM capabilities of the Nigerian Quantity firms was *employees' capacity to learn* with (4.43) that lies between high and extremely high but tends more toward extremely high. This portrayed the perception of most respondents that Quantity Surveyors have very good capacity in capturing and retaining beneficial knowledge that would assist them in performing their tasks appropriately.

Using competencies in new rather than just familiar circumstances and *Enhance attitude of employees toward any complicated work* were ranked closed to the bottom of the listed factors with (3.94) means scores each, this is in line with what has been envisaged because of

the conservatism attitude of the Quantity Surveyors as discovered in the above table. *Commitment from relevant parties* was ranked lowest with (3.8) mean score which lies in between moderate and high but inclined more to high. This illustrated the lack of devotion and insufficient commitment from the parties involved in these firms to set appropriate plans for adoption and implementation of KM concept.

Table 4.5: Means/Ranking of Responses to Assess Intelligence

Group B (Intelligence)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Employees can do attitude to everything (optimistic)	51	4.45	High	1
Employees capacity to learn	51	4.43	High	2
People performance in generating knowledge	51	4.33	High	3
The way employees deal with new ideas/knowledge	51	4.18	High	4
Co-workers tenacious and stickiness to their task (concentration)	51	4.10	High	5
Using competencies in novel rather than just familiar circumstances of co-workers	51	3.94	High	6
Enhance attitude of employees toward any complicated work	51	3.94	High	7
commitment from relevant parties	51	3.75	High	8

In group C (skills) as presented in the table (4.6) below, the first most accomplished factor pertaining KM capabilities in the Nigerian Quantity Surveyors was *employees' accomplishment to their specific task* with (4.61) that lies between high and extremely high though tends more to extremely high. This implies the perception of most respondents that Quantity Surveyors are efficient in handling their specific tasks and completing it as required. *Ability of people in handling their job/tasks* was the second in this category with (4.43) means score that lies between high and extremely high though tends more to high, this indicate how Quantity Surveyors are competent in handling their specific task in view of executing their cost management services.

Employees' general skills was ranked third in this category with (4.35) that lies between high and extremely high though tends more closer to high which signifies the vast knowledge/skill acquired in various field of human endeavour ranging from construction to management by most Quantity Surveyors so as to perform their cost management services successfully. *Grasping new ideas/knowledge and integrates them into desired results* was ranked lowest with (4.10) mean value in this group. This implies the perception of the respondents that Quantity Surveyors have minimal ability in applying the acquired knowledge to appropriate task that would yield to a better result.

Table 4.6: Means/Ranking of Responses to Assess Skills

Group C (Skills)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Employees accomplishment to their specific task	51	4.61	High	1
Ability of people in handling their job/tasks	51	4.43	High	2
Employees general skills	51	4.35	High	3
Patience and persistence of people to troubleshoot issues	51	4.33	High	4
Grasping new ideas and integrate them into desired results	51	4.10	High	5

Table (4.7) as shown below, presents the rankings of the capability influencing factors of the Nigerian Quantity Surveying firms, the ranking was done based on the mean values derived from the responses from Quantity Surveying firms. In this category (motivation) all factors were ranked below (4.0), *Flexibility in working arrangement* was ranked highest with (3.98) mean value which lies between moderate and high though move closely towards high. This intends to signify to us that from the respondents' perception the Quantity Surveying firms have supple arrangement within where staff can contribute freely with any positive deed thought to yield better result without much rigidity or concentration to only specific set of personnel.

Moreover, *supportive IT infrastructure* was the second highest ranked factor with (3.94) means score. This also inclined between moderate and high but move more closely towards high, this implies the perception of most respondents that supportive IT tools such as computer systems for generating knowledge, internet services for sharing knowledge, external storage facilities like hard drives for storing generated knowledge and effective software like QS plus and Excel were mostly used for executing their tasks.

Incentives provided to employees was ranked third with (3.88) means value which moved closely to high as above, this reveals that employees in Quantity Surveying firms were provided with ample incentives but some claimed that the enticement given are not materially as wish for. *Efficiency of the performance appraisal system* was ranked closed to last in this classification with (3.43). This is also not surprising, because it is very rear in our settings to get firms that have effective carrot and stick approach to all its employees evenly.

Recognition of employees' needs and *staff training and development* were the lowest ranked factor in group D (motivation) with (3.25) means value score each that lies between moderate and high but move more closely towards moderate, this implies the perception of most respondents that in most Quantity Surveying firms the needs of the employees are not properly handled as expected most especially materially and they were not send to attend developmental seminars and workshops that would keep them up to date and to embrace the recent advancement in the construction industry. This shows the extent of insufficient motivation and poor human development in the firms.

Table 4.7: Means/Ranking of Responses to Assess Motivation

Group D (Motivation)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Flexibility in working arrangement	51	3.98	High	1
Supportive IT infrastructure	51	3.94	High	2
Incentives provided to employees	51	3.88	High	3

Reward when dealt with new problems encountered successfully	51	3.75	High	4
Acknowledgement of any superior performance	51	3.47	High	5
User friendly Technology	51	3.47	High	5
Efficiency of the performance appraisal system in your firm	51	3.43	High	7
Recognition of employees' needs	51	3.25	Moderate	8
Staff Training and Development	51	3.25	Moderate	8

From table (4.8) shown, *Receptiveness of employees to new knowledge* was the factor ranked highest in this group with (4.49) means score that lies between high and extremely high though tends more towards extremely high. This implies the perception of most respondents that Quantity Surveyors are always willing to accept and share knowledge within their firms. *Willingness to adopt idea originated elsewhere* was ranked third (4.16) and *willingness of employees to accept and share new knowledge* with (4.14) that both lies between high and extremely high though tends more to high this indicate the readiness of Quantity Surveyors to embrace knowledge generated elsewhere that would enhance their performance in carrying out their cost management services.

Openness between people within their firms was ranked nearest to the last having (3.94) means score that moves toward high. This uncover the perception of the respondents that most Quantity Surveyors are open minded and this would enhance their knowledge sharing attitude through mentoring or other appropriate knowledge sharing techniques. *Attentiveness of people when capturing knowledge* was ranked lowest with (3.80) means value which lies between moderate and high but tends more towards the higher side, this implies the perception of most respondents that though Quantity Surveyors are willing to explore unknown ideas/knowledge and beneficial knowledge but they are less concentrative in the course of generating and capturing the already generated knowledge.

Table 4.8: Means/Ranking of Responses to Assess Communication

Group E (Communication)

MEASURES OF KM CAPABILITIES	*N*	*Mean*	*Capability*	*Rank*
Receptiveness of employees to new ideas/knowledge	51	4.49	High	1
Trust between the parties	51	4.41	High	2
Willingness to adopt idea originated elsewhere	51	4.16	High	3
Willingness of employees to accept and share new knowledge	51	4.14	High	4
Keenness of co-workers to explore unknown ideas/knowledge	51	4.08	High	5
Openness between people within the firm	51	3.94	High	6
Attentiveness of people when capturing knowledge	51	3.80	High	7

The analysis in table (4.9); presents the means values of 38 measures of KM capability influencing factors in five categories ranging from group A to group E, the result shows that 16 factors were scored between 3.0 to 4.0 means values whereas the remaining 22 were scored between 4.0 to 5.0 means values, therefore no any factor scored below average of 3.0.

Based on the above analysis made, if we enlist the ten highest KM capabilities factors presence in the firms from the respondent's point of view, we have the following list starting with the highest in each group;

Employees' accomplishment to their specific task, Receptiveness of employees to new knowledge, Flexibility in the structure of the firms, Stakeholder's commitment and competence, Employees can do attitude to everything (optimistic), Employees' capacity to learn, ability of people in handling their jobs, Trust between the parties, Flexibility in working arrangement and *Supportive IT infrastructure.*

However, from findings the followings were the ten capability factors rated low, starting from the least in each group;

Reluctance to change the routine, Recognition of employees needs, Staff training and development, Commitment from relevant parties, Attentiveness of people when capturing knowledge, Openness between people within the firm, Enhance attitude of employees toward any complicated work, Guidelines to embrace new ideas, Grasping new ideas and integrate them into desired results and *Patience and persistence of people to troubleshoot issues,*

Table 4.9: Consolidated Ranking of Responses

Group A (Creativity)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Flexibility in the structure of your firm	51	4.45	High	1
Stakeholders commitment and competence	51	4.45	High	1
Extent to which employees utilize logic to explore new ideas	51	4.43	High	3
Solving problems through irregular means	51	4.43	High	3
Broad knowledge background of employees	51	4.16	High	5
Employees' tolerance for ambiguity and discomfort	51	4.06	High	6
Guidelines to embrace new ideas	51	3.94	High	7
Reluctance to change the routine	51	3.25	Moderate	8

Group B (Intelligence)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Employees can do attitude to everything (optimistic)	51	4.45	High	1
Employees capacity to learn	51	4.43	High	2
People performance in generating knowledge	51	4.33	High	3
The way employees deal with new ideas/knowledge	51	4.18	High	4
Co-workers tenacious and stickiness to their task (concentration)	51	4.10	High	5
Using competencies in novel rather than just familiar circumstances of co-workers	51	3.94	High	6
Enhance attitude of employees toward any complicated work	51	3.94	High	6
commitment from relevant parties	51	3.75	High	7

Group C (Skills)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***

Employees accomplishment to their specific task	51	4.61	High	1
Ability of people in handling their job/tasks	51	4.43	High	2
Employees general skills	51	4.35	High	3
Patience and persistence of people to troubleshoot issues	51	4.33	High	4
Grasping new ideas and integrate them into desired results	51	4.10	High	5

Group D (Motivation)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Flexibility in working arrangement	51	3.98	High	1
Supportive IT infrastructure	51	3.94	High	2
Incentives provided to employees	51	3.88	High	3
Reward when dealt with new problems encountered successfully	51	3.75	High	4
Acknowledgement of any superior performance	51	3.47	High	5
User friendly Technology	51	3.47	High	5
Efficiency of the performance appraisal system in your firm	51	3.43	High	7
Recognition of employees' needs	51	3.25	Moderate	8
Staff Training and Development	51	3.25	Moderate	8

Group E (Communication)

MEASURES OF KM CAPABILITIES	***N***	***Mean***	***Capability***	***Rank***
Receptiveness of employees to new ideas/knowledge	51	4.49	High	1
Trust between the parties	51	4.41	High	2
Willingness to adopt idea originated elsewhere	51	4.16	High	3
Willingness of employees to accept and share new knowledge	51	4.14	High	4
Keenness of co-workers to explore unknown ideas/knowledge	51	4.08	High	5
Openness between people within the firm	51	3.94	High	6
Attentiveness of people when capturing knowledge	51	3.80	High	7

This section assessed the different KM capability areas and ranked them accordingly based on their overall means values deduced from the responses. The analysis show us that Quantity Surveyors often have the necessary *skills* required for executing their cost management services as the computed average means value of that variable was ranked above all other factors with (4.36), this also agrees with the findings in table (4.4.) row 6 which reveals that Quantity Surveyors have a broad knowledge

background in various human endeavours ranging from Construction, Law, Management and Economics among others that usually enhance their performance in carrying out their services.

According to Kalaloski *et al*., (2001) knowledge and skills are the basic requirement for the tasks, even if the other aspects of the individual (e.g. creativity, intelligence etc) were in good place. Thus an understanding of the task specific skills of individual and personnel as a whole is an important factor when assessing the capabilities of an organization.

Creativity was ranked second with (4.18) after computing the overall means of the following nine factors; 4.45, 4.45, 4.43, 4.43, 4.41, 4.16, 4.06, 3.94, and 3.25. This also concurred with the previous findings in Adeeko (2012) study which reveals that there is flexibility in the structure as well as the working arrangement in the consultancy firms in the Nigerian Construction Industry and this can only be attributed due to the innovativeness of most professionals in that sector. As envisage the creative people are good in initiating plain and conducive working environment that enhance both knowledge generation and sharing in an organization.

In the context of organizational capabilities, creativity only refers to individual employees' creativity supporting an organizations' capability of reaching its goals and objectives upon which it was established (cook *et al.*, 2000). Creative people in an organization use their resourcefulness to innovate flexible organizational structure that will enhance managing knowledge as mentioned earlier.

Communication has seven (7) variables with the following means scores; 4.49, 4.41, 4.16, 4.14, 4.08, 3.94 and 3.80 with computed overall means score of (4.15), it was ranked third after Creativity. This shows to some extent that effective communication procedures do exist in the Quantity Surveying firms which often encourage knowledge acquisition and also ease knowledge sharing. As can be seen in the table (4.8), the Quantity Surveyors are always willing to accept knowledge generated within their firms as well as knowledge generated

elsewhere. 'Willingness' is a prerequisite for enhancing knowledge sharing efficiently in any organization.

Handy *et al*., (2009) opined that communication capability in the context of organizational capabilities is referred to those required at work; an individual may be communicative and clear in domestic situations, but he is unable to communicate at the level required at work, he does not increase the organizational capabilities. According to some researchers without effective communication, individuals would not be able to share knowledge, and the organization is unable to learn.

Intelligence was ranked closed to the last in the list of capability areas with (4.14) average means score and this was deduced from the means values of eight (8) variables with the following; 4.45, 4.43, 4.33, 4.18, 4.10, 3.94, 3.94 and 3.75. This implies that Quantity Surveying firms have low capability in initiating newer ways of carrying out their services and this was aptly agreed with the findings in table (4.4) row 8 and 9 which shows that Quantity Surveying firms have a very minimal guidelines that would enhance their generation as well as adoption of new knowledge and they are often unwilling to change their usual way of carrying out their services in accordance to the speedy contemporary changes.

The intellect of individual people is an attribute that creates intellectual capital (knowledge) for an organization, and thus it can also be defined as being an attribute of organizational capability. According to Lubart (2009) people who are intelligent have efficient thinking ability, high tolerance for any complicated work and are very speedy in changing from their obsolete routine activities in order to comply with advancement.

From the entire categories, *Motivation* has appeared to be diminutive when compare with the rest of the knowledge-based capability areas with the average means value of (3.61) of nine variables with the following means scores; 3.98; 3.94, 3.88, 3.75, 3.47, 3.47, 3.43, 3.25 and

3.25. This shows the extent of insufficient incentives provided to the personnel in Quantity Surveying firms which will suppress their performance in view of knowledge generation as well as sharing and this was in compliance with the findings in table (4.7) row 8 and 9 which reveals that, the needs of the employees are not properly handled as envisaged.

An individual's motivation in the context of organizational capabilities refers to his internal voluntary willingness to accomplish the tasks that create competence for an organization (Handy *et al*., 2009). Skills, knowledge, creativity etcetera are useless, if the person possessing them is not motivated to use them. Therefore with proper motivation in a firm, knowledge will be generated and shared intentionally consequently avoiding the risk of loosens such knowledge that would improve firm efficiency.

Table 4.10: Overall Means of Various Capability Areas

Knowledge-based Capability Areas	***N***	***Average Mean***	***Capability***	***Rank***
Creativity	9	4.18	High	2
Intelligence	8	4.14	High	4
Skills	5	4.36	High	1
Motivation	9	3.61	Moderate	5
Communication	7	4.15	High	3

As shown in the table (4.11) below; 17 of the respondents were either Principal Partners or Partners in their firms, 15 of them were Senior Quantity Surveyors while 19 were Quantity Surveyors. This indicated that (33.3%) of the respondents were at senior management level and (29.4%) of them were at middle management level whereas (37.3%) were lower managers in their respective firms.

12 out of the 51 respondents representing (21.6%) had Ordinary National Diploma (OND) as their highest academic qualification attained whereas (33.3%) have Higher National Diploma, (11.8%) have Post Graduate Diploma, (21.6%) had earned their first Degree and the

remaining (11.1%) have Masters Degree in Construction related field. In addition, when the respondents were separated in accordance to the professional membership attained with the Nigerian Institute of Quantity Surveyors; 14 of them were Fellow members of the Institute and majority of them (17) were corporate members of the Institute. 8 were Probational members with the Institute whereas the remaining 12 were either students members or neither attained any membership of the Institute.

when classified according to their working experience in the construction work, 18 out of the 51 respondents have 0 – 5 years experience, 1 of them have average of 6 – 10 years experience in the construction work, 10 have 11 – 15 years working experience in the Construction Industry. 5 out of the total had between 16 – 20 years and the rest (17) have over 20 years experience in the construction work. Furthermore, the sizes of the participating firms have also been distributed in line with the classification of the National Bureau of Statistics (NBS). Small (below 10), Medium (11 – 20), and Large (above 20) employees. It can be seen that more than half (26) of the respondents' firms were small size firms having 5 to 10 employees in the firms and 23 of the respondents' firms have employees ranging from 11 to 20 while 2 out of the entire participated respondents' firms have over 20 employees indicating large size firms.

Table 4.11: Demographic Characteristics of the respondents

S/N	Variables	Frequency	Cumulative Frequency	Percentage	Cumulative Percentage
	Rank in the Firms				
1	Top Managers	17	17	33.30	33.30
	Middle Managers	15	32	29.40	62.70
	Lower Managers	19	**51**	37.30	**100.00**
	Academic Qualification				
2	OND	11	11	21.60	21.60
	HND	17	28	33.30	54.90
	PGD	6	34	11.80	66.70
	DEGREE	11	45	21.60	88.30
	MASTERS	6	**51**	11.80	**100.00**
	Professional Membership				
3	Fellow	14	14	27.50	27.50
	Corporate	17	31	33.30	60.80
	Probationer	8	39	15.70	76.50
	Others	12	**51**	23.50	**100.00**
	Average Work Experience				
4	0 - 5 years	18	18	35.30	35.30
	6 - 10 years	1	19	2.00	37.30
	11 - 15 years	10	29	19.60	56.90
	16 - 20 years	5	34	9.80	66.70
	Over 20 years	17	**51**	33.30	**100.00**
	Size of the Firms				
5	Small size firms	26	26	50.98	50.98
	Medium size firms	23	49	45.10	96.08
	Large size firms	2	**51**	3.92	**100.00**

4.5 Analysis of Variance to Compare Means

Further analysis was also carried out to find out if there is any significant differences on the opinion of the respondents based on their positions in their firms, highest academic qualifications attained, professional membership with the Institute, average years of

experience in the construction work and the size of the respondents' firms have effect on their view.

Analysis of variance (ANOVA) was used in carrying out the test because the significant difference to be identified in all categories is among more than two variables. ANOVA is a technique used to compare the means of two or more different samples; with ANOVA the question of whether or not the occurrence or means scores of different samples vary significantly from one another is answered. The following tables show the result of a one – way ANOVA comparing the means scores of responses to test if they are significantly different from each other.

The Analysis of Variance (ANOVA) statistics in the tables (4.12 and 4.13) below show that there is no significant difference among the three categories of the respondents (top managers, middle managers and lower managers) in their view on the questions indicated in the table (4.9) above. This is because the calculated F ratio values of the issues under investigation are less than the F critical value of 2.60, F (2,111) = 0.312 and the calculated sig. (p) is greater than 0.05 level of tolerance (0.733). For statistically significant difference to occur the F critical value must be greater than 2.60 and the significance value (p) of one – way ANOVA should be less than 0.05.

As appeared in the below analysis from table (4.12 and 4.13) we can conclude that there is no significant difference in the opinions of the top managers to that of middle managers and lower managers for the attainment of KM capabilities in their firms and this was aptly agreed with the means of the three categories in table (4.12) as there is no significant difference among all of them.

Table 4.12: Descriptive statistics of Anova based on Ranks in the Firms

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Top Managers	38	4.0692	0.42309	0.06863	3.9301	4.2083	3.29	4.71
Middle Managers	38	3.9932	0.44746	0.07259	3.8461	4.1402	3.20	4.53
Lower Managers	38	4.0261	0.39100	0.06343	3.8975	4.1546	3.26	4.58
Total	114	4.0295	0.41858	0.03920	3.9518	4.1071	3.20	4.71

Table 4.13: Analysis of variance based on Ranks in the Firms

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.111	2	0.055	0.312	0.733
Within Groups	19.688	111	0.177		
Total	19.799	113			

The Analysis of Variance (ANOVA) in the tables (4.14 and 4.15) as shown below depicts that there is no significant difference in the opinions of the five groups of the respondents in terms of the higher academic qualification attained, starting from ND holders, HND holders, PGD holders, Degree holders and Masters Degree Holders. The calculated F ratio values of the issues under investigation are less than the F critical value of 2.60, F (4,185) = 0.181 and the calculated sig. (p) are greater than 0.05 level of tolerance (0.948). For significant difference to exist as mentioned early the F critical value must be more than 2.60 and the significance value (p) of one – way ANOVA should be not more than 0.05.

We can therefore said that despite the different academic qualifications acquired by the respondents, their opinions of the questions investigated did not vary much as we can see vividly

from the mean values of various categories in table (4.14) and the significance value (p) of one – way ANOVA which is (0.948) from table (4.4.7). This implies that any result deduced from the analysis can be generalized to all groups of the respondents.

Table 4.14: Descriptive statistics of Anova based on Academic Qualification

					95% Confidence Interval for Mean	
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
OND	38	4.0255	0.44053	0.07146	3.8807	4.1703
HND	38	4.0071	0.41003	0.06652	3.8723	4.1419
PGD	38	4.0168	0.43387	0.07038	3.8742	4.1595
DEGREE	38	4.0524	0.39149	0.06351	3.9237	4.1810
MASTERS	38	4.0774	0.40249	0.06529	3.9451	4.2097
Total	190	4.0358	0.41248	0.02992	3.9768	4.0949

Table 4.15 : Analysis of variance based on Academic Qualification

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.125	4	0.031	0.181	0.948
Within Groups	32.031	185	0.173		
Total	32.156	189			

The results of the ANOVA statistics in the tables (4.16 and 4.17) below show that there is no significant difference in the opinion of the respondents in spite of their affiliations to the Nigerian Institute of Quantity Surveyors, some are fellow members, some corporate members or Probational members and some neither attained any membership of the Institute. This is because the calculated F ratio values of the subject under investigation are F (3,148) = 0.985 which is far below the critical value of 2.60 and the calculated sig. (p) are in excess of 0.05 level of tolerance (0.402). For statistically significant difference to take place, the F critical

value must be above 2.60 and the significance value (p) of one – way ANOVA should be below 0.05 level of tolerance.

From this outcome, we can said that any result gotten from the analysis of their responses (fellow members, corporate members, Probational members and others) can be generalized since there is no significant difference in their agreement with questions investigated in the table (4.9) above.

Table 4.16: Descriptive statistics of Anova based on Professional Membership

					95% Confidence Interval for Mean	
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
Fellow	38	4.0753	0.41552	0.06741	3.9387	4.2118
Corporate	38	4.0184	0.42942	0.06966	3.8773	4.1596
Probationer	38	3.9271	0.46479	0.07540	3.7743	4.0799
Others	38	4.0676	0.37957	0.06157	3.9429	4.1924
Total	152	4.0221	0.42336	0.03434	3.9543	4.0900

Table 4.17: Analysis of variance based on Professional Membership

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.530	3	0.177	0.985	0.402
Within Groups	26.535	148	0.179		
Total	27.064	151			

The Analysis of Variance (ANOVA) carried out to compare the means of responses based on the respondents' average years of experience in the construction work reveals that there is significant difference in the opinions of the five groups of the respondents in line with the questions under investigation. The calculated F ratio is greater than the F critical value of 2.60, F (4,185) = **5.724** and the calculated sig. (p) is less than 0.05 level of tolerance (**0.000**).

For significant difference to happen as mentioned early the F critical value must be more than 2.60 and the significance value (p) of one – way ANOVA should be not more than 0.05.

The result shown in Table (4.18 and 4.19) provide strong empirical support that their exist a statistically difference in the opinions of the respondents in accordance to their working experiences in the construction industry ranging from 0 – 5 years, 6 – 10 years, 11 – 15 years, 16 – 20 years and over 20 years, it is therefore of paramount importance to further test the result in other to find out where the significant difference of their view lie - in using Tukey Post – Hoc multiple comparisons test.

Table 4.18: Descriptive statistics of Anova based on Years of Experience

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
0 - 5 yrs	38	4.0571	0.40882	0.06632	3.9227	4.1915	3.28	4.67
6 - 10 yrs	38	3.5526	0.92114	0.14943	3.2499	3.8554	2.00	5.00
11 - 15 yrs	38	3.9763	0.47558	0.07715	3.8200	4.1326	3.20	4.60
16 - 20 yrs	38	4.0368	0.41812	0.06783	3.8994	4.1743	3.40	4.60
Over 20 yrs	38	4.0605	0.38901	0.06311	3.9327	4.1884	3.29	4.59
Total	190	3.9367	0.58732	0.04261	3.8526	4.0207	2.00	5.00

Table 4.19: Analysis of variance on Experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.180	4	1.795	5.724	0.000
Within Groups	58.015	185	0.314		
Total	65.195	189			

The Tukey Post Hoc test as shown in the table (4.20) present how some responses differed significantly with one another. From the result, the responses of the people with 0 to 5 years working experience in the industry did not differed significantly with those having 11 to 15 years, 16 to 20 years and those having over 20 years of experience but varied significantly

with the opinion of people with 6 to 10 years experience as the calculated sig. (p) value is (**0.001**) between the two groups.

The analysis further depicts visibly that person with 6 to 10 years experience have different view on the issue under investigation (KM capabilities of the Nigerian Quantity Surveying firms) with the remaining categories 0 to 5 years, 11 to 15 years, 16 to 20 years and over 20 years experience having computed significance value was below 0.05 level of tolerance. The (p) values are; 0.001, 0.010, 0.002, 0.001 respectively.

For statistically significant difference of the responses to take place the significance value of Tukey Post – Hoc multiple comparisons test must be less than 0.05 and we can see that from table (4.20) most of the values are greater than 0.05 level of tolerance with the exception of the above listed and this implies that people with 0 to 5 years, 11 to 15 years, 16 to 20 years and over 20 years experience have related view on the questions investigated.

Table 4.20: Multiple Comparisons of Responses based on Work Experience in the Construction Industry

Tukey HSD

(I) Average Years of Experience	(J) Average Years of Experience	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 - 5 yrs	6 - 10 yrs	0.50447	0.12847	0.001	0.1506	0.8584
	11 - 15 yrs	0.08079	0.12847	0.970	-0.2731	0.4347
	16 - 20 yrs	0.02026	0.12847	1.000	-0.3337	0.3742
	Over 20 yrs	-0.00342	0.12847	1.000	-0.3573	0.3505
6 - 10 yrs	0 - 5 yrs	-0.50447	0.12847	0.001	-0.8584	-0.1506
	11 - 15 yrs	-0.42368	0.12847	0.010	-0.7776	-0.0698
	16 - 20 yrs	-0.48421	0.12847	0.002	-0.8381	-0.1303
	Over 20 yrs	-0.50789	0.12847	0.001	-0.8618	-0.1540
11 - 15 yrs	0 - 5 yrs	-0.08079	0.12847	0.970	-0.4347	0.2731
	6 - 10 yrs	0.42368	0.12847	0.010	0.0698	0.7776
	16 - 20 yrs	-0.06053	0.12847	0.990	-0.4144	0.2934
	Over 20 yrs	-0.08421	0.12847	0.965	-0.4381	0.2697
16 - 20 yrs	0 - 5 yrs	-0.02026	0.12847	1.000	-0.3742	0.3337
	6 - 10 yrs	0.48421	0.12847	0.002	0.1303	0.8381
	11 - 15 yrs	0.06053	0.12847	0.990	-0.2934	0.4144
	Over 20 yrs	-0.02368	0.12847	1.000	-0.3776	0.3302
Over 20 yrs	0 - 5 yrs	0.00342	0.12847	1.000	-0.3505	0.3573
	6 - 10 yrs	0.50789	0.12847	0.001	0.1540	0.8618
	11 - 15 yrs	0.08421	0.12847	0.965	-0.2697	0.4381
	16 - 20 yrs	0.02368	0.12847	1.000	-0.3302	0.3776

The responses were further considered according to the size of the respondents' firms to find out whether the sizes of their firms have effect on their view on the issues investigated as can be seen in the table (4.21 and 4.22). The Analysis of Variance was used to compare the means of responses based on the respondents' firms' sizes and the result disclosed that there is significant difference in the opinions of the various groups (small size, medium size and large size firms) of the respondents in line with the questions under investigation. The calculated F ratio is greater than the F critical value of 2.60, F (2,111) = **3.735** and the calculated sig. (p) is less than 0.05 level of tolerance (**0.027**). For significant difference to

transpire as mentioned early the F critical value must be more than 2.60 and the significance value (p) of one – way ANOVA should be not more than 0.05.

This show us that the opinion of the respondents varies in accordance to the sizes of their firms those from small size, medium size and large size firms, it is therefore important to further test the result so as to pin point where the significant difference of their opinion lie - in using Tukey Post – Hoc multiple comparisons test.

Table 4.21: Descriptive statistics of Anova based on Firms' Sizes

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Small size firms	38	4.0034	0.41407	0.06717	3.8673	4.1395	3.19	4.62
Medium size firms	38	4.0426	0.38311	0.06215	3.9167	4.1686	3.30	4.61
Large size firms	38	4.2368	0.39825	0.06461	4.1059	4.3677	3.50	5.00
Total	114	4.0943	0.40821	0.03823	4.0186	4.1700	3.19	5.00

Table 4.22: Analysis of variance based on Firms' Sizes

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.187	2	0.594	3.735	0.027
Within Groups	17.643	111	0.159		
Total	18.830	113			

*. The mean difference is significant at the 0.05 level.

The Tukey Post Hoc test shown in table (4.23) below described in detail how some respondents differed significantly with others in their opinions on the issues investigated. From the result, the responses of the people from small size and medium size firms did not differed significantly as the computed sig. (p) value is (**0.0904**) between the two groups. Similarly, the respondents from medium size and large size firms do have related

view in their responses as the calculated sig. (p) value is (**0.090**) between the two groups but when the responses from small size to that of large size firms was compared the opinions of the people varied significantly having the calculated sig. (p) value as (**0.032**) between the two groups.

For statistically significant difference of the responses to take place the significance value of Tukey Post – Hoc multiple comparisons test must be less than 0.05 level of tolerance. This further depicts vividly that people from small size firms have the same opinions to those from medium size firms but have different view on the issue under investigation (KM capabilities of the Nigerian Quantity Surveying firms) with the respondents from large size firms.

Table 4.23: Multiple Comparisons of Responses based on Firms Sizes of the Respondents

Tukey HSD

					95% Confidence Interval	
(I) Size of the firms	**(J) Size of the firms**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**Lower Bound**	**Upper Bound**
Small size firms	Medium size firms	-0.03921	0.09146	0.904	-0.2565	0.1781
	Large size firms	-0.23342	0.09146	0.032	-0.4507	-0.0161
Medium size firms	Small size firms	0.03921	0.09146	0.904	-0.1781	0.2565
	Large size firms	-0.19421	0.09146	0.090	-0.4115	0.0231
Large size firms	Small size firms	0.23342	0.09146	0.032	0.0161	0.4507
	Medium size firms	0.19421	0.09146	0.090	-0.0231	0.4115

*. The mean difference is significant at the 0.05 level.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This summarized the analysis of the result made in chapter four and draws major conclusions from them;

i. The rating of the mean values of the responses reveals that; flexibility in the structure of the firms, stakeholders' commitment and competence, and receptiveness of employees to new knowledge/ideas among others were the factors ranked highest with 4.5 means scores and flexibility in working arrangement with 4.3 mean value. From the findings, the followings were ranked low based on the respondents' point of view; efficiency of the performance appraisal system with 3.4 and reluctance to change the routine, recognition of employee's needs and staff training and development with 3.3 mean values each.

ii. The more the mean tends to 5, the more it attained hence more capability in the Nigerian Quantity Surveying firms whereas the more it tends to 1 the less it attained hence less capability in the firms. This implies that; judging from their mean values, all categories of KM capability areas were reasonably accomplished in the Nigerian Quantity Surveying firms as they are all above average and this to some extent agreed with the findings of past research on KM requirements by Adeeko (2012) that reveals the presence of KM requirements in the consultancy firms in Nigerian Construction Industry.

iii. The study reveals that Quantity Surveyors have positive perception toward the KM concept and most of them are in the view that Knowledge is a key resource to any firm that owns it.

iv. The opinions of the different categories of the respondents (Quantity Surveyors) based on their various rank in their firms are the same pertaining the questions investigated.

v. Despite the different academic qualifications earned and distinct professional membership affiliation with the Nigerian Institute of Quantity Surveyors of the respondents, they have the same view on the attainment of KM capabilities in the Nigerian Quantity Surveying firms.

vi. The opinion of the single respondent with 6 – 10 years working experience little varied in his view with the others on the issues under investigation but on the average he still agrees with the attainment substantially.

vii. The opinions of the Quantity Surveyors from small size firms compare to those from medium size firms, medium size firms to that of large size firms did not differed but when the view of the respondents from small size firms weigh to that of large size firms their opinions varied slightly.

viii. Quantity Surveyors are of the view that adopting and implementing KM in the Nigerian Quantity Surveying firms would enhance their ability in carrying out their cost management services.

ix. However, in spite of inadequate motivation as revealed from the findings, Nigerian QS firms can go ahead to adopt and implement KM as obtained results in this research shows other capability areas are reasonably high in the firms.

5.2 Conclusion

The need to assess the KM capabilities of the Nigerian Quantity Surveying firms has become imperative because of it paramount importance in view of implementing KM concept.

The findings revealed that most Quantity Surveyors are in the view that knowledge is a vital

resource to any firms that owns it and it will definitely enhance the performance of that firm. Results shown that, most employees in the Quantity Surveying firms are exposed to the low motivation which most times demoralized them in generating and sharing knowledge willingly.

It is therefore important for Quantity Surveying firms to motivate their employees appropriately so that their capabilities of managing knowledge would be enrich.

5.3 Recommendations

In the light of the aim and objectives of this research and the findings discussed in chapter four, this study makes the following recommendations.

i. The results indicated that motivation was the least in the KM capability areas attained in the firms, improving it through appropriate incentives would strengthen the KM capabilities in the Nigerian Quantity Surveying firms.
ii. It is also recommended that, providing user friendly technology, human development through training and developmental workshops and also establishing flexible working arrangement will enhance their KM capabilities.
iii. Carrot and stick approach should be implemented in the firms that will enhance employee's capability.

5.4 Recommendations for Further Studies

i. Since the study covered only few Nigerian states, it is recommended to widen the coverage of the research to other Quantity Surveying firms in other parts of the country in order to justify the recent findings.
ii. This research was only restricted to Quantity Surveying consultancy firms in the Nigerian Construction Industry, it is suggested to carry out similar assessment on

construction firms in the Nigerian Construction Industry.

iii. Additional similar research should be run on Architectural and Engineering consultancy firms of the Nigerian Construction Industry and compares the results.

5.5 Contributions to Knowledge

The study has both academic and practical contributions as its offers useful insight of adopting KM concept in the Nigerian Quantity Surveying firms which will be beneficial to all stakeholders in Nigerian Construction Industry.

As mentioned within the text, more than half of failed KM initiatives eventuate due to firms not considering their capabilities before implementing it. So our assessment of the existing KM capabilities in the Nigerian Quantity Surveying firms furnished us with the extent of KM capabilities of the firms and indicated the grey areas that should be improve in order to adopt and implement KM effectively.

The study established the KM capabilities, if espoused will enhance KM adoption and implementation and highlighted the challenges for adopting KM in the Nigerian Quantity Surveying consultancy firms.

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APPENDIX I

Department of Quantity Survey,
Faculty of Environmental Design,
School of Post Graduate Studies,
Ahmadu Bello University,
Zaria.
May, 2013.

QUESTIONNAIRE SURVEY

Dear Respondent,

ASSESSMENT OF KNOWLEDGE MANAGEMENT CAPABILITIES OF THE NIGERIAN QUANTITY SURVEYING FIRMS

This questionnaire is a part of an M.Sc (Quantity Surveying) degree research work in the Ahmadu Bello University, Zaria, Nigeria. It is designed to capture relevant information on the above mentioned research work. The topic is being studied as an academic work and also as a contribution to managing knowledge in the quantity surveying firms.

Knowledge management (KM) is a systematic management approach to identify and capture the "knowledge assets'' of a firm so that they can be fully exploited and protected as a source of competitive advantage whereas KM capabilities are organizational mechanisms for generating knowledge continuously. They can encourage acquiring knowledge, protecting knowledge and facilitating knowledge sharing in an organization.

The questionnaire consists of two sections:

Section A: Respondent's profile

Section B: KM capabilities

Your response will be treated with utmost confidentiality and shall be used strictly for academic purpose only.

Yours Faithfully,

Umar Isma'il

Umarismail19@yahoo.com:08036987725

QUESTIONNAIRE

Section A: Personal Data

Kindly tick (√) as appropriate.

1. Average years of experience of respondent.

0 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] 16 – 20 years [ ] Over 20 years [ ]

2. Highest level of educational qualification attained.

Ordinary National Diploma (OND) [ ] Higher National Diploma (HND) [ ]

Post Graduate Diploma (PGD) [ ] First Degree [ ] Master Degree [ ]

Doctorate Degree [ ] others, (please specify) [ ]…….....

3. Highest level of professional qualification attained

Fellow [ ] Corporate [ ] Probational [ ]

Others, (please specify) [ ] …….....

4. Rank/ Designation/Position in the firm

Principal Partner [ ] Partner [ ] Senior QS [ ] QS [ ]

others, (please specify) [ ] …….....

5. Number of employees in the firm

5 – 10 [ ] 11 – 20 [ ] above 20 [ ]

SECTION B: KNOWLEDGE MANAGEMENT CAPABILITIES

1. How familiar are you with the term KM concept?

a. Strongly familiar [ ] b. Familiar [ ] c. Not familiar [ ] d. Strongly not familiar [ ]

2. Do you recognize knowledge as a key resource?

a. Definitely agree [ ] b. Agree [ ] c. Disagree [ ] d. Definitely disagree [ ]

3. Do your firm have a plan on KM concept?

a. Completely agree [ ] b. Agree [ ] c. Disagree [ ] d. Completely disagree [ ]

Group A

The following are measures for assessing the capabilities of QS firms, using a numbered scale of 1 to 5 where 1 = Extremely low and 5 = Extremely high, please tick the appropriate box to indicate the degree of agreement to the statement on the left.

S/No	MEASURES OF KM CAPABILITIES FOR NIGERIAN QS FIRMS	1	2	3	4	5
1	Guidelines to embrace new ideas					
2	Reluctance to change the routine					
3	Broad knowledge background of employees					
4	Stakeholders commitment and competence					
5	Flexibility in the structure of your firm					
6	Divergent thinking ability of employees					
7	Solving problems through irregular means					
8	Extent to which employees employ logic to explore new ideas					
9	Employees' tolerance for ambiguity and discomfort					

Group B

The following are measures for assessing the capabilities of QS firms, using a numbered scale of 1 to 5 where 1 = Extremely low and 5 = Extremely high, please tick the appropriate box to indicate the degree of agreement to the statement on the left.

S/No	MEASURES OF KM CAPABILITIES FOR NIGERIAN QS FIRMS	1	2	3	4	5
1	Employees capacity to learn					
2	Enhance attitude of employees toward any complicated work					
3	Co-workers concentration and stickiness to their task(s)					
4	Performance of People in generating knowledge					
5	Employees can do attitude to everything (optimistic)					
6	Using competencies in new rather than just familiar circumstances of co-workers					
7	The way employees deal with new ideas/knowledge					
8	Commitment from relevant parties					

The following are measures for assessing the capabilities of QS firms, using a numbered scale of 1 to 5 where 1 = Extremely low and 5 = Extremely high, please tick the appropriate box to indicate the degree of agreement to the statement on the left.

S/No	MEASURES OF KM CAPABILITIES FOR NIGERIAN QS FIRMS	1	2	3	4	5
1	Grasping new ideas and integrate them into desired results					
2	Patience and persistence of people to troubleshoot issues					
3	Employees general skills					
4	Employees accomplishment to their specific task					
5	Ability of people in handling their job/tasks					

Group D

The following are measures for assessing the capabilities of QS firms, using a numbered scale of 1 to 5 where 1 = Extremely low and 5 = Extremely high, please tick the appropriate box to indicate the degree of agreement to the statement on the left.

S/No	MEASURES OF KM CAPABILITIES FOR NIGERIAN QS FIRMS	1	2	3	4	5
1	User friendly Technology					
2	Acknowledgement of any superior performance					
3	Recognition of employees' needs					
4	Reward when dealt with new problems encountered successfully					
5	Efficiency of the performance appraisal system in your firm					
6	Incentives provided to employees					
7	Supportive IT infrastructure					
8	Staff Training and Development					
9	Flexibility in working arrangement					

Group E

The following are measures for assessing the capabilities of QS firms, using a numbered scale of 1 to 5 where 1 = Extremely low and 5 = Extremely high, please tick the appropriate box to indicate the degree of agreement to the statement on the left.

S/No	MEASURES OF KM CAPABILITIES FOR NIGERIAN QS FIRMS	1	2	3	4	5
1	Openness between people within the firm					
2	Willingness of employees to accept and share new knowledge					
3	Attentiveness of people when capturing knowledge					
4	Receptiveness of employees to new ideas/knowledge					
5	Keenness of co-workers to explore unknown ideas/knowledge					
6	Trust between the parties					
7	Willingness to adopt idea originated elsewhere					

In your own opinion, suggest other factors that will help to assess the capabilities of Nigerian QS firms.

_____

_____

_____