IMPACT OF KNOWLEDGE MANAGEMENT PRACTICES ON CONSTRUCTION PRODUCTIVITY IN KWARA STATE

BY

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CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

The construction industry plays a significant role in the economic development of any nation, serving as a major contributor to infrastructure, employment, and overall economic activities. However, in recent times, productivity challenges within the industry have drawn significant attention from stakeholders and researchers alike. Knowledge management (KM) practices have emerged as a critical area of focus to address these challenges, as the construction industry increasingly acknowledges the need to manage intellectual resources effectively (Nonaka & Takeuchi, 2016; Davenport & Prusak, 2018).

This research investigates the impact of knowledge management practices on construction productivity in Kwara State, Nigeria, exploring how the adoption and implementation of KM frameworks influence performance, efficiency, and project delivery.

Construction productivity has long been identified as a key determinant of project success. It involves the efficient utilization of resources such as labor, materials, equipment, and time to achieve project goals (Harris & McCaffer, 2013). However, the construction industry, particularly in developing regions like Kwara State, faces persistent issues such as delays, cost overruns, and poor quality of work. These challenges are often linked to inadequate knowledge-sharing mechanisms, lack of innovation, and inefficiencies in organizational learning (Egbu, 2014).

Knowledge management practices—which include knowledge creation, sharing, storage, and application—have been recognized as a strategic approach to improving organizational performance (Alavi & Leidner, 2021). In the context of construction, KM facilitates the transfer of expertise, enhances decision-making processes, and fosters collaboration among stakeholders (Carrillo et al., 2022).

Despite its potential benefits, the adoption of KM practices in the Nigerian construction industry remains limited, with many firms lacking structured systems to harness and utilize knowledge effectively. Kwara State, as one of Nigeria's developing regions, has seen significant growth in construction activities in recent years. However, this growth has not been accompanied by corresponding improvements in productivity. By examining the role of

knowledge management practices in enhancing construction productivity, this study aims to provide actionable insights to bridge the knowledge gaps and improve industry outcomes.

1.2 Statement of Research Problems

The construction industry in Kwara State is plagued by persistent productivity challenges, including inefficiencies, delays, and resource wastage. These issues are often compounded by poor knowledge-sharing practices, inadequate documentation of lessons learned from previous projects, and a lack of innovation-driven approaches to project management. While studies have demonstrated the benefits of knowledge management in improving organizational performance, there is limited research on its application in the construction industry in Kwara State.

As construction projects become increasingly complex, the inability to manage knowledge effectively exacerbates productivity issues, leading to suboptimal project outcomes. Without a clear understanding of how Knowledge Mangement practices influence productivity, construction firms in Kwara State risk falling behind in a competitive and rapidly evolving industry. This study seeks to address this gap by exploring the impact of knowledge management practices on construction productivity, identifying key barriers, and proposing strategies for effective implementation.

Knowledge management (KM) practices have increasingly become integral to enhancing productivity and efficiency in the construction industry, particularly in regions like Kwara State, Nigeria, where the construction sector is pivotal to economic development. KM involves the systematic management of an organization's knowledge assets to create value and meet tactical and strategic requirements. It encompasses processes such as knowledge creation, storage, sharing, and application, which are critical in addressing the complexities of construction projects. Below, I explore how KM has impacted construction firms, consultants, and clients in Kwara State, focusing on productivity, collaboration, innovation, and sustainability, while addressing challenges and opportunities specific to the region.

Construction firms in Kwara State, like many in Nigeria, operate in a dynamic environment characterized by project complexity, tight schedules, and resource constraints.

KM enables construction firms to capture and reuse lessons learned from past projects, reducing errors and rework. For instance, documenting best practices in areas like cost estimation, material selection, and project scheduling allows firms to streamline processes. A study examining KM in Nigerian construction firms highlighted that effective knowledge sharing reduces project delays and cost overruns, directly boosting productivity.

Consultants in the construction industry, including architects, engineers, and project managers, play a critical role in ensuring project success. Consultants in Kwara State use KM to stay informed about local and national regulations, such as building codes or environmental policies. By maintaining updated knowledge bases, they ensure that designs and recommendations comply with legal requirements, reducing the risk of project delays or penalties. Clients, including property developers, government agencies, and private individuals, are key stakeholders in construction projects.

1.3 Research Questions

1. What is the level of awareness and adoption of knowledge management practices among construction firms in Kwara State?
2. How do knowledge management practices influence construction productivity in Kwara State?
3. What are the key challenges preventing the effective implementation of knowledge management practices in the construction industry?
4. What strategies can be employed to improve the adoption and effectiveness of Knowlegde Management practices in the construction sector?

1.4 Aim and Objectives of the Study

1.4.1 Aim

The aim of this study is to examine the impact of knowledge management practices on construction productivity in Kwara State, with a view to identifying strategies for improving project performance.

1.4.2 Objectives of the Study

In order to achieve this study, the following research objectives were formulated;

1. To assess the level of awareness and adoption of knowledge management practices among construction firms in Kwara State.
2. To examine the relationship between knowledge management practices and construction productivity.
3. To identify the challenges hindering the implementation of knowledge management practices in the construction industry in Kwara State.
4. To propose strategies for enhancing the adoption and effectiveness of knowledge management practices in the construction sector.

1.5 Significance of the Study

This study contributes to both academic and practical discourse on the importance of knowledge management in the construction industry. Academically, it fills a gap in existing literature by focusing on the Nigerian context, particularly Kwara State, where limited research has been conducted on this subject. Significance of the Study

The study on the Impact of Knowledge Management Practices on Construction Productivity in Kwara State holds immense significance for various categories of stakeholders, the construction industry as a whole, and clients who engage construction services. This research is not only timely but crucial in addressing the persistent productivity challenges faced in the construction sector, especially in developing contexts like Kwara State.

This study is of paramount importance to construction stakeholders, including project managers, engineers, architects, contractors, suppliers, and regulatory authorities. By evaluating how knowledge management (KM) practices—such as knowledge acquisition, sharing, documentation, and application—affect productivity, stakeholders will be better equipped to harness organizational knowledge and individual expertise to optimize project delivery. The findings will provide valuable insights into how structured KM practices can reduce redundancies, enhance decision-making, and prevent recurring mistakes in construction projects. Additionally, the research highlights the need for training and professional development in KM systems, helping stakeholders to embrace technology and collaboration as productivity drivers.

For the construction industry in Kwara State, this study offers a strategic roadmap toward sustainable growth and enhanced performance. The construction sector is inherently

knowledge-intensive and fragmented, often involving multiple parties and complex processes. Therefore, improving knowledge flow across all phases of construction—design, planning, execution, and post-completion—is critical to minimizing time and cost overruns. The study underscores how effective KM practices can improve project coordination, resource allocation, and adherence to timelines and budgets. It will inform policy development and institutional frameworks for the construction industry, advocating for the integration of knowledge-based strategies into standard operating procedures. This in turn can lead to industry-wide improvements in productivity, innovation, and competitiveness both locally and nationally.

Clients, who are often the financiers and beneficiaries of construction projects, stand to gain significantly from the outcomes of this study. The research demonstrates how KM practices contribute to delivering higher quality projects within stipulated timelines and budget constraints. When knowledge is properly managed, clients can expect better communication, transparency, and accountability from construction professionals. This improves trust and satisfaction while reducing the likelihood of disputes and project failures. Furthermore, clients will understand the value of selecting firms with established KM frameworks, thereby promoting the demand for professional excellence and best practices in the industry.

1.6 Scope and Limitation of the Study

The scope of this study is confined to construction firms operating in Kwara State, Nigeria. It focuses on examining the awareness, adoption, and impact of knowledge management practices on construction productivity. This study is specifically focused on examining the impact of knowledge management (KM) practices on construction productivity within Kwara State, Nigeria. I chose Kwara State because there are many new construction productivity in the state presently. The research seeks to explore the various dimensions of knowledge management—such as knowledge acquisition, documentation, sharing, retention, and application—and how these practices influence the overall efficiency, output, and performance of construction projects.

The study will primarily cover selected construction firms operating in both the public and private sectors within key urban centers of Kwara State, including Ilorin, Offa, and other strategically relevant locations where significant construction activities are taking place. It will

include input from a range of construction professionals such as project managers, engineers, architects, quantity surveyors, site supervisors, and skilled workers.

The scope of the research is limited confined to Kwara State, Nigeria. It does not extend to other states or regions, though the findings may have broader implications for similar contexts.

The study focuses on stakeholders in the construction industry, including professionals and personnel directly involved in the planning, execution, and management of construction projects. It does not include clients, policymakers, or users of completed infrastructure unless they are involved in knowledge management processes within the construction firms.

The study will consider ongoing and recent construction projects (within the past five years) in order to ensure that the data and responses reflect current practices and realities in knowledge management and productivity.

1.7 Definition of Terms

1.7.1 Knowledge Management (KM)

The systematic process of creating, sharing, storing, and applying knowledge to enhance organizational performance (Nonaka & Takeuchi, 2015).

1.7.2 Construction Productivity

The measure of the efficiency of resource utilization in achieving construction project goals, often expressed as the output per unit of input (Harris & McCaffer, 2013).

1.7.3 Knowledge Sharing

The exchange of information, skills, and expertise among individuals or teams within an organization to improve performance (Alavi & Leidner, 2021).

1.7.4 Innovation

The implementation of new ideas, methods, or technologies to improve processes, products, or services (Egbu, 2018).

1.7.5 Organizational Learning

The process by which an organization acquires, develops, and transfers knowledge to adapt and improve over time (Senge, 2019).

1.7.6 Barriers to Knowledge Management

Factors that hinder the effective implementation of KM practices, such as lack of awareness, resistance to change, and inadequate technological infrastructure (Carrillo *et al.,* 2014).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

To survive in a competitive knowledge economy, it is imperative that firms needs to do more in forecasting tomorrow than yesterday and constantly looking out on new ways to correct and prevent problems and make continuous improvement to achieve business sustainability. Knowledge management makes sense to first organize what people know as a division and then to share it, which led to a whole host of cultural issues.

Alavi and Zack (2019) in their work stated that knowledge management highlights the importance of a sharing culture in order to support and foster knowledge management focus. In fact Knowledge Management (KM) focuses on different alternatives of sharing and storing the knowledge of individuals as a way of improving the competency, speed, efficiency and profitability of an organization.

Qunitas, et al. (2017) define knowledge management as a means of managing all knowledge continuously to meet various requirements in an organization. Coleman (2019) defines knowledge management as an umbrella term for a wide variety of interdependent and interlocking functions which comprises of knowledge creation, knowledge valuation and metrics, knowledge mapping and indexing, knowledge transport, storage and distribution, and knowledge sharing. Gurteen (1998) comprehensively defined knowledge management as an emerging set of organizational design and operational principles, processes, organizational structures, applications and technologies that helps knowledge workers to dramatically leverage their creativity and ability to deliver business value.

Knowledge management implementation enables an organization to learn from its corporate memory, share knowledge, and identifies competencies in order to become a forward thinking and learning organization. Researchers such as Kamara, et al. (2020) and Love, et al. (2023) highlighted the benefits of knowledge management to the growth of organizations if successfully implemented as it is evident in producing innovation, reducing project time, improving quality and customer satisfaction. According to Siemieniuch, et al. (2019) noted

that organization's intangible assets can be used properly to create value, with both internal and external knowledge being leveraged to the benefit of the organization if knowledge management is been implemented successfully.

In the construction industry, knowledge management can improve communications within teams, and provide more informed knowledge by sharing best practice documents, lessons learned, project management and system engineering methodologies, examples of review packages, and the rationale for strategic decisions. Kaklauskas, et al. (2015) distinguish such knowledge management benefits as productive information use, activity improvement, intelligence enhancement, intellectual capital storage, strategic planning, flexibility acquisition, best practice gathering, success probability enhancement and productive collaboration.

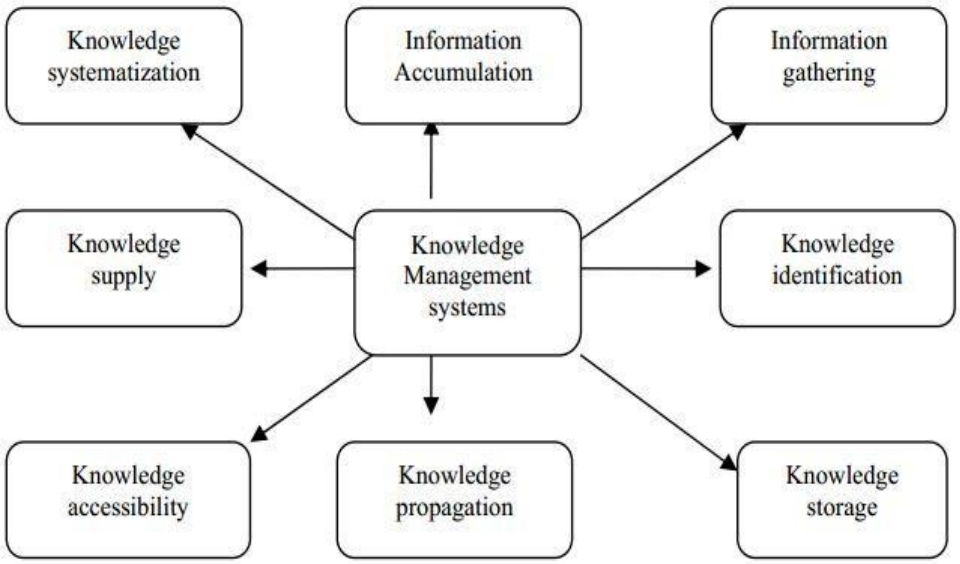
There is no precise definition of knowledge management within the construction industry. However, Egbu (2024) in his work describes knowledge as an important resource for construction organizations due to its ability to provide market leverage and contributions to organizational innovations and project success. The idea of knowledge as a competitive resource within project-oriented industries is a concept shared by various researchers such as: Nonaka and Takeuchi, Egbu and Botteril, and others.

Braf (2000) split the definition of knowledge into two parts and defined them as Explicit and Tacit Knowledge. Polanyi (2010) defined tacit knowledge with an old saying that "People know more they can tell". Sanchez (2005) refined the work of Polanyi by defining tacit knowledge as rooted into actions, procedures, ideas, values and emotions and this type of knowledge only exist in the human body. Simard and Rice (2007) state that the greater the degree of tacit knowledge, the harder the knowledge is to share. While explicit knowledge is objective, rational and can easily be documented, Little et al (2005) stated that explicit knowledge is knowledge that can easily be communicated to others in form of verbal or written language and examples of explicit knowledge are books, manuals and formulas. Both forms of knowledge are important for organizational effectiveness and growth. Mohamed and Anumba (2006) finally argue that tacit knowledge is mainly associated with the construction industry which calls for a knowledge management mechanism to be set aside.

2.1Concept of Knowledge Management

If organizations seek to effectively implement knowledge management, Davenport and Prusak (1998) maintained that there must be a shared implication of the terminology which they presented as three levels of knowledge. Firstly, they define data as discrete and objective facts about events without placing it in any context. Secondly they defined information as contextual, categorized, calculated, corrected and condensed combinations of data embodied as a message between a sender and receiver. And finally, they combined information with experience and got the feelings of individuals which in turn create knowledge.

The concept of knowledge management is summarized using the systems approach generally adopted by many researchers, as shown in figure 2.1.below.



Source: Laura (2008).

Figure 2.1 Concept of Knowledge Management

The above systems approach is further explained in Table 2.1 below.

Table 2.1: Concept of Knowledge Management.

Data →	Information →	Knowledge
Raw facts and figures.	Facts and figures taken in context, which convey meaning.	An accumulation of information, building on existing ideas and experience.

To enable us distinguish between data, information and knowledge as a concept of knowledge management as summarized in the table 2.1, we look into the work of Meadow (2002) as he defines data as raw facts, strings of elementary symbols such as letters or digits. According to Drucker (2001) stated that data can be transformed into information when it's put into some context, with respect to relevance and purpose but with or without experience.

2.2Knowledge Management Processes

Alvavi, et al. (2021) stated that knowledge management concepts existing in different literature differ considerably in terms of numbers and labeling of process rather than the underlying knowledge management concepts. It is important to review the work of Grant (2005) which distinguishes between two key processes, namely the generation of new knowledge and the effective application of new and existing knowledge. Ruggles (1998) looked at it from another perspective and defines eight processes presented in Table 2.2.

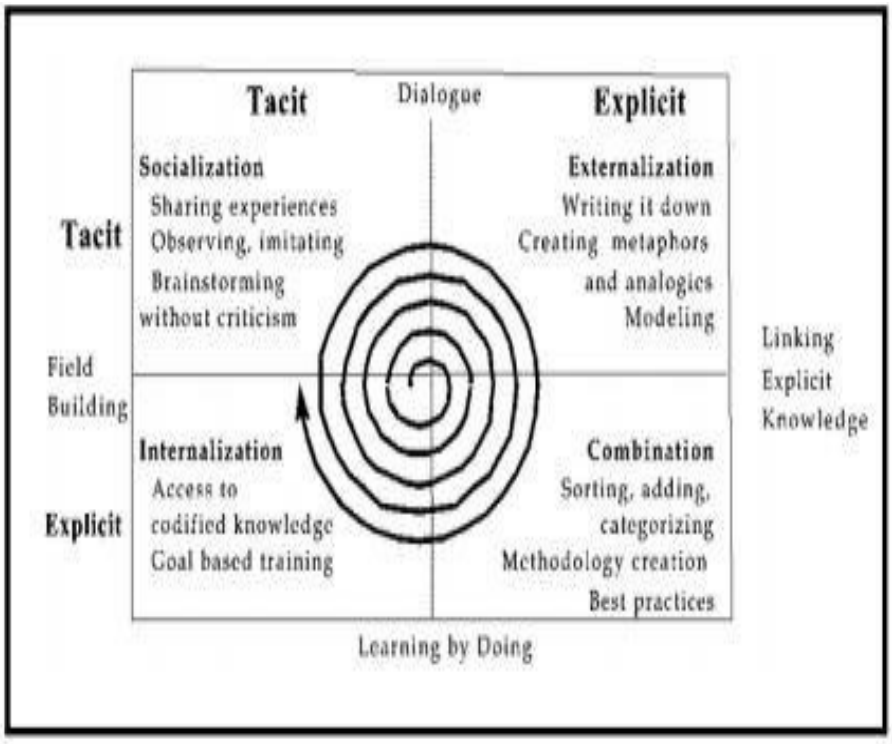
Table 2.2: Knowledge management process

Researcher	Classification
Nonaka and Takeuchi, 1995 Nonaka and Teece, 2001	• Creation; • Transmission; • Utilisation
Leonard, 1995	• Acquire; • Collaborate; • Integrate; • Experiment
DeLong, 1997	• Capture; • Transfer; • Use
Ruggles, 1998	• Generate; • Access (from external sources); • Facilitate (through culture and incentive); • Present (in documents, databases and software); • Embed (in processes, products, and/or services); • Use(in decision making); • Transfer (into other parts of the organisation); • Measure (the value of knowledge assets)
Skyrme and Aidon, 1998; Spender, 1996	• Create; • Transfer; • Use
Teece, 1998	• Create; • Transfer; • Assemble; • Integrate • Exploit
Gold, Malholtra and Segars, 2001	• Acquisition; • Conversion; • Application; • Protection
Grant, 2005	• Generation; • Application

Source: Siti (2024)

2.3Knowledge Creation

Dave et al. (2019) stated that knowledge can be created in an organization with continuous interaction among individuals and a continuous conversion from tacit into explicit knowledge by individuals, supported by the organization. Nonaki et al (1995) presented a model of knowledge conversion named SECI as shown in figure 2.2 below and it has become the main source of reference in the area of knowledge management.



Source:Nonaka's Spiral Knowledge (Vilalba, 2006). [9]

Figure 2.2: Knowledge Creation

2.3.1 Socialization

Little et al. (2005) defined socialization as the process of converting new tacit knowledge through shared experiences. This can be achieved through sharing and experiences, observing, imitating and brainstorming without criticism. Firms often take advantage of the tacit knowledge embedded in other parties such as contractor or even other quantity surveyors by

interacting with them. Shared value is created through a process of socialization, whereby a common identity and collective interpretations of reality are formed.

2.3.2 Externalization

The process of converting tacit knowledge to explicit knowledge is defined as Externalization, which can be achieved through writing, creating metaphors and modeling.

2.3.3 Combination

Combination is a conversion process which referred to forms of explicit knowledge which are conveyed through email, documents, database, meetings and briefing. This involves the collecting of relevant knowledge, distributing and editing or processing to make it more usable to user.

2.3.4 Internalization

Ray, et al. (2005) described Internalization as the process of embodying explicit knowledge into tactic. Through Internalization explicit knowledge created is shared within an organization and converted into tacit by individuals.

2.4Knowledge Sharing

Knowledge sharing is one of the core blocks of knowledge management. Probably it is the important aspect of knowledge management. Dalkir (2005) noted that knowledge sharing is denoted as the edge to create knowledge which contributes to the increase in employees' performance and harnessing innovation. Grant (1996) stated that knowledge sharing is a key to the success of knowledge management in theory and practice. Jashapatra (2004) maintained that knowledge sharing is a set of commitments that involves the exchange of information and knowledge among the other employees in an organization.

2.4.1 Role of Individuals in Knowledge Sharing

Nonaki (2016) noted that in the process of knowledge sharing, individuals in an organization serve as knowledge generator and knowledge receptor and this knowledge is generated by exchanging their ideas and experience through socialization. For instance, employee one is made to know a problem faced by a fellow employee two and employee one has the solution to the problem. Employee one may share or may not share the knowledge with employee two. It is up to employee one to share the knowledge with the employee two. The example shows that individuals serve as the driving force behind the process of knowledge sharing.

Nonaka et al. (1995) added that, knowledge sharing will not be successful within an organization without the involvement of humans. In this case it important to understand factors that influence individuals to share knowledge.

2.5Conceptual Framework of Knowledge Sharing

This section describes the concept of knowledge sharing to further understand this research assignment.

2.5.1 Social Cognitive Theory, Constructs and Knowledge Sharing

The social Cognitive Theory is a social learning theory. Bandura (1989) introduced this theory and defined individual behavior as dynamic, reciprocal or interactive network of personal factors, behavior and the surroundings. This theory postulates that the combination of the three human behavior factors breed to a formulation of a certain outcome and expectation that lead to a decision.

These allude to the fact that individuals consider a combination of factors that are personal, social and environmental to make decisions on either to exhibit a certain behavior or not. Bandura went further to argue that the mind of an individual is an active tool which guides one's steps towards formulating expectations, abilities and outcomes.

Altruism also has a linkage with Social Cognitive Theory in that individuals look at the psychological benefits before getting involved in sharing their knowledge. Even though an altruistic person may be seen recognized as unselfish, a study conducted by Honeycutt, (1981) argues that an altruistic person gains a kind of control over the recipients.

However an altruistic individuals can act based on his own interest while social cognitive theory also argue that an individual's ability to exhibit certain behavior is based on some certain factors which may be personal goals.

2.5.2 Social Exchange Theory, Constructs and Knowledge Sharing

Blau (1964) stated that the social exchange theory is one of the models used in explaining knowledge sharing behavior and he added that Social exchange is based on the behavior of individuals, outcomes or benefits, environment and the interpersonal network between individuals. In other words the Social exchange Theory strives to use relationships or exchanges as cost benefit analyses. In this way people will strive to maximize profit and minimize cost in their own way.

The social Exchange Theory maintains that individuals may not be involved into certain activities unless they see a positive outcome. This is not in any way a commodity exchange but it can be a mental assumption of positive outcome in knowledge sharing and in a way individuals will not share their knowledge when they perceive activities as mere costs, but will intend to share it when positive returns are expected.

2.5.2.1Trust

Fox (1974) stated that trust is the focal point of every relationship within the organization. Dyer et al. (1998) noted that with trust people tend to take risk with the intention of full participation with the other individual without causing any harm.

According to Nonaka and Tekeuchi (1995), trust among individuals in and out of an organization contributes to improvement in knowledge sharing. Kalantzis and Cope (2003), in their work they added that interpersonal trust is directly proportional to knowledge sharing. People will be motivated to share their knowledge when they perceive that other individuals are honest, trustworthy, and reliable. Higher trust will make individuals not think of any future negative occurrence on the activities and will share their knowledge.

2.5.2.2Altruism

Chattopadhyay (2019) saw altruism as a behavior that costs one individual and benefits another. Altruism is a costly activity that profits others (However, some individuals may share their experience and knowledge with others without thinking of the benefit he or she may gain from it. From the definitions above, it can be seen that individuals within an organization may share their knowledge unselfishly.

2.5.2.3 Mutual Reciprocity

Davenport and Prusak (2008) stated that mutual reciprocity is one of the key enablers of knowledge sharing. Blau (1964) described reciprocity as an actions that are contingent on rewarding reactions from others and that cease when these expected reactions are not forthcoming. And Kelley, et al. (1978) added that individuals involved in virtual teams would share their knowledge when they perceive a commensurate behavior from the other individuals.

It was established that knowledge sharing within organizations is enhanced through reciprocity shown by other individuals. Chiu et al. (2006) finally added that reciprocity has a positive significant relationship to knowledge sharing behavior. Mutual reciprocity is about cost and benefit. In the context of knowledge sharing, the donor of the knowledge will decide whether the recipient possesses potential of giving back a positive outcome.

2.5.2.4 Self Efficacy

Bandura (2017) described self efficacy as a people's judgments of their capabilities to organize and execute courses of action. It not based on the skills one possess but with judgments of what one can do with whatever skills one possesses. Elias et al. (2010) conducted a study on self efficacy and added that it influences individuals' adjustment behavior.

This shows that an individual's behavior of sharing his or her knowledge may be influenced by his or her self efficacy. Figure 2.3 below shows the conceptual framework of this knowledge sharing concepts as follows:

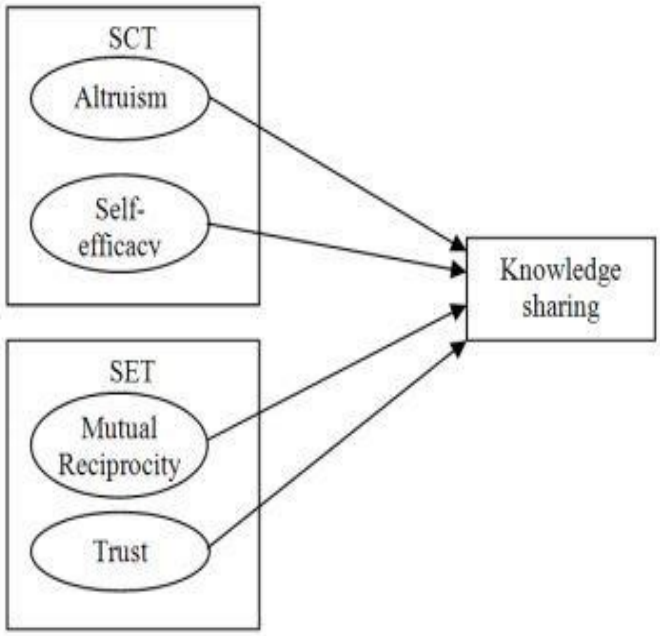


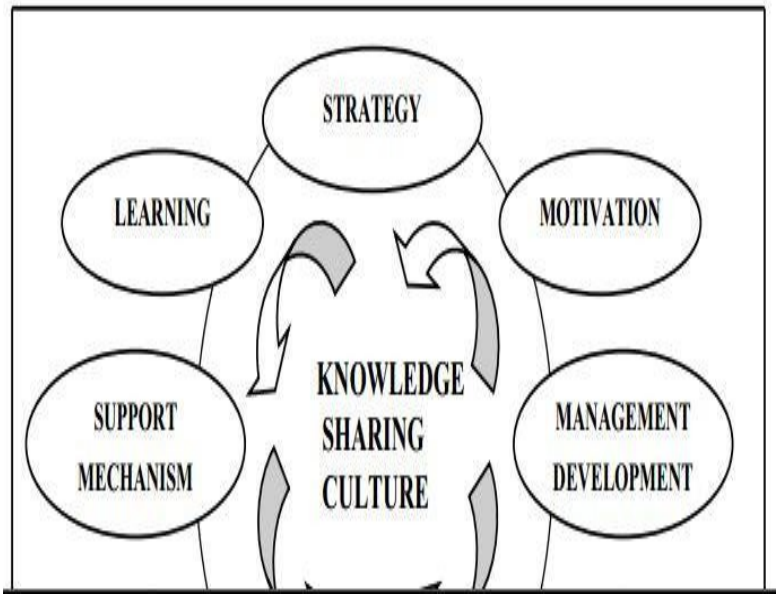
Figure 2.3: Knowledge sharing framework.

2.6Knowledge Sharing Culture

Stoddart (2001) stated that for knowledge sharing to work, organizations first have to have a culture that open and accept sharing and he further argue that knowledge sharing can only work if the culture of the Organization promotes it. De Long

et al. (2000) conducted a study which they showed that culture influence knowledge sharing by as much as 80%. To effectively develop organization knowledge sharing culture, there must be need to change the culture of the organization strategy, structure, support mechanism, management development, communication, trust, motivation and learning.

These approaches are all based on the fundamental premise that it is the responsibility of the management to play an important part in motivating her employees toward a knowledge sharing culture.



Source: Lisa Low (2010)

Figure 2.4: factors that facilitate the development of Knowledge Sharing

2.6.1 Strategy

Scarbrough (2018) remarked that the most valuable employee is one who becomes a source of knowledge and actively shares that knowledge with other people. In this context, arguably, one of the most important items for the effective sharing of knowledge is a clear and conscious knowledge strategy. In some organizations they adopt the codification strategy which is central on the computer. Knowledge is carefully codified and stored in the databases, where it can be accessed and used easily by anyone in the organization.

In other organizations, knowledge is built around an individual who developed it and is shared mainly through direct person to person contacts. Hassan et al (2001) stated that the primary reason of using the computers in organizations is to help people communicate knowledge not to store it; which is known as personalization strategy. Scarbrough (1998) and Gross (2001) show that involvement of managers in knowledge sharing is important in the sense that a leader is usually viewed as a charismatic person who is prepared to take risks and brings about long term changes in people attitudes, behaviors and culture (Adair, 1988). Leadership plays an obvious role to the managerial skills in developing organization knowledge sharing culture.

2.6.2 Structure

The knowledge infrastructure is an important part of organizational structure. Knowledge Infrastructure is the sum of those organizational structures and guidelines, as well as technical and non-technical employees, of which the organization has in their disposal. These structures, guidelines and expertise support learning process within the organization. Gareth (2004) maintained that with these infrastructures organizations goals are reached in the most efficient way.

Organization structure and processes should be designed in ways that will foster and encourages knowledge sharing among the employees through teamwork. Organization structure is way of fostering the constant growth of employees or individuals in an organization to make their knowledge, their information, their capacities and their attitude productive. It is widely acknowledge that increased employees responsibility leads to increased quality.

2.6.3 Support Mechanism

Information technology (IT) has been closely associated to knowledge management and knowledge sharing. The reason is stated by McCampbell et al. (1999) that IT provides platform not only for storage and access of information but also for communication. Therefore to actualize the concept of knowledge sharing culture, organization should put emphasize on their IT infrastructure and tools such as mail,

telephone, facsimile, Internet, Intranet, e-mail with pictures reference, video conferencing, and telephone conferencing.

Smith (2001) argues that the availability of information technology tools (software) play important roles in knowledge management. It is imperative that the application of project management software, software for technical estimation and CAD software are useful for construction organization learning and sharing efforts. Egan (1998) stated that the construction industry involves several disciplines with a complex network of communications between these disciplines.

Similarly, the entire construction supply chain demands a supporting document management system to communicate, capture and record the information. The application of decision support system and standardized IT solution are therefore beneficial in distributing knowledge within the industry. Shattow (1996) concluded that information technology is obviously a supportive mechanism and an important resource for successful innovation.

2.6.4 Management Development

Fisher (1989) stated that the involvement of many organizations in a particular project provides a strong basis for conflicts during the construction process, partly due to domain of consensus, accessibility of information, interdependency of tasks, and individual performance. Mumford, et al. (1997) added that tolerance of conflict and the handling of conflicts constructively are values that support creative and innovative behavior in organizations.

The way in which an organization handled mistakes and promote safety standard will determine if their employees feel free to act creatively and innovatively in their knowledge sharing effort. Brodtrick (1997) noted that mistakes can be ignored, covered up, used to punish someone or perceived as a learning opportunity and he added that if staffs are encourage discussing their mistakes openly and seek help, it can promote a knowledge sharing and learning culture.

2.6.5 Communication

Communications can be described as a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior. By developing more effective communication networks, organizations strive to create more willing and effective coordination of diverse activities.

In a study conducted by Watson Wyatt Worldwide (1998) it noted that poor communication was found to be the reason for a generally low level of trust between managers and employees in most organizations.

2.6.6 Trust

Geoffrey (1997) noted that without high trust, organizations will not fully exploit their potential assets and that no knowledge management strategy will succeed, unless organizations care about the knowledge that exists within their organizations and have their employees at heart; only then will knowledge sharing culture thieve.

2.6.7 Motivation

Robbins (1993) saw motivation as the "willingness to exert high levels of effort toward organizational goals by a way of recognizing the efforts of and satisfying her employees. The way a company rewards its employees contributes heavily to their satisfaction and retention. This is because individuals understand that in exchange for their effort and commitment, the organization will develop them and reward them for their work. And this is an important way of attracting, retaining and tapping knowledge workers as stated by Ching and Yang (2000).

2.6.8 Learning

Trevor (2018) stated that learning is being able to use information that is remembered through understanding its relevance to people experience. People are motivated to learn when they recognize that they can benefit personally from the learning.

Learning is very important to people who want to develop their skills. Senge (1990) has defined organization learning as the process through which managers seek to

improve organization members' desire and ability to understand and manage the organization and its environment so that they make decisions that will profit the organization.

2.7Summary

In essence Knowledge Management is in essence an organizing principle which lays the foundation for capturing the potentials of possessed knowledge within an organization. To make the most of the organizations recourses and enhance knowledge sharing, it is important to acknowledge that it is about managing both technology and people in order to provide a profitable knowledge environment. Knowledge sharing tools aim to do something useful by structuring people, information technology and knowledge content.

One challenging issue with organizations in procurement policies and procedures is the way they should expand their knowledge to enable them to deliver commendable services and promote knowledge sharing for the growth of the industry, benefits of the stakeholders, and also the community or society where the construction projects are developed and completed.

CHAPTER THREE
RESEARCH METHODOLOGY

Introduction

For this study, the research design primarily centered around the utilization of questionnaires and surveys as the primary instruments for data collection. This approach was chosen after careful consideration of various factors related to the research objectives, target population, and practical constraints.

3.2.1 Rationale for Choosing Questionnaires and Surveys:

I. **Efficient Data Collection:** Questionnaires and surveys offer an efficient means of gathering data from a large and diverse sample of participants within the building materials industry. The structured nature of these instruments allows for the systematic collection of responses to predefined questions, streamlining the data collection process.

II. **Standardized Responses:** By using questionnaires and surveys, standardized responses to key research questions were ensured, enabling comparability and consistency across participants. This standardization is essential for conducting rigorous statistical analysis and drawing meaningful conclusions from the data.

III. **Practicality and Cost-effectiveness**: Questionnaires and surveys provide a practical and cost-effective approach to data collection, particularly when working with a geographically dispersed population. Electronic administration of surveys allows for rapid dissemination and data collection without the logistical challenges associated with in-person interviews.

IV. **Accessibility:** Questionnaires and surveys are accessible to a wide range of participants, including those with varying levels of literacy and technological proficiency. This accessibility promotes inclusivity and ensures that diverse perspectives are captured in the study.

3.2.2 Development of Comprehensive Questionnaire:

The research design involved the development of a comprehensive questionnaire tailored to address key research objectives and hypotheses. The questionnaire

underwent a rigorous process of design and validation to ensure its effectiveness in eliciting relevant information from participants. The questionnaire included a mix of closed-ended and open-ended questions, strategically designed to capture both quantitative data for statistical analysis and qualitative insights for deeper understanding. Closed-ended questions provided respondents with predefined response options, facilitating quick and easy data collection, while open-ended questions allowed participants to express nuanced opinions and experiences.

3.2.3 Administration of Questionnaire:

To maximize participation and reach a diverse audience, the questionnaire was administered through various electronic means, including social media platforms, email, and online survey tools. This approach enabled me to engage with participants across different demographics and geographic locations, enhancing the representativeness of the sample.

3.2.4 Sampling Strategy:

Surveys were administered to a sample of participants selected from relevant stakeholders within the building materials industry, including importers, manufacturers, traders, policymakers, and regulatory authorities. The sampling approach aimed to ensure representation across different sectors and geographic regions, enhancing the generalizability of the findings.

3.2.5 Integration with Academic Databases:

In addition to primary data collection through questionnaires and surveys, secondary data from academic databases such as Google Scholar and ResearchGate were utilized to supplement the research findings. These sources provided valuable context and background information on customs duties, trade policies, and the construction sector in Nigeria, enriching the analysis and strengthening the overall validity of the study.

3.3. Population Of the Study

The population of the study comprised members of the Kwara State Building Materials Traders Association, representing a key stakeholder group within the building materials industry in Kwara State, Nigeria. The Kwara State Building Materials Traders Association is a prominent organization that brings together individuals and businesses involved in the importation, distribution, and sale of building materials within the state.

This population was selected due to its direct involvement and firsthand experience in the importation and trading of building materials, making them well-positioned to provide valuable insights into the impact of customs duties on importation practices and market dynamics within Kwara State. Additionally, members of the association represent a diverse range of perspectives and interests within the building materials sector, including importers, wholesalers, retailers, and other industry stakeholders.

By focusing on this specific population, the study aimed to obtain a comprehensive understanding of the challenges, opportunities, and implications associated with customs duties on building materials importation in Kwara State. Through the participation of members of the Kwara State Building Materials Traders Association, the research sought to capture a broad spectrum of experiences and perspectives, thereby enhancing the richness and depth of the data collected.

Overall, the population of the study was strategically chosen to ensure relevance and applicability to the local context of Kwara State, Nigeria. By engaging with members of the Kwara State Building Materials Traders Association, the research aimed to generate insights that could inform policy decisions, industry practices, and advocacy efforts aimed at addressing the challenges and maximizing the opportunities associated with customs duties on building materials importation in the state.

3.4. Sample size and Sampling Technique

3.4.1. Sample size

The determination of the sample size was a critical aspect of the research methodology, influencing the representativeness and reliability of the findings. In this study, the sample size (n) was calculated using the formula:

Where:

Z = Z-value (based on the desired confidence level)

p = Estimated proportion of the population with a particular characteristic

E = Margin of error

A sample size of 85 participants was targeted for inclusion in the survey and interviews, ensuring adequate coverage of the diverse stakeholders involved in the building materials industry.

3.4.2. Sampling Techniques

The sampling technique employed in this study was purposive sampling, which involved selecting participants based on specific criteria relevant to the research objectives. Purposive sampling allowed for the deliberate selection of individuals with expertise, experience, or involvement in the importation, manufacturing, or distribution of building materials. By purposively selecting participants, the study could ensure that the sample represented a diverse range of perspectives and insights within the industry.

3.5. Method of Data Collection

Data collection for this study entailed both primary and secondary sources of information:

3.5.1. Primary Source

Primary data was collected through surveys and interviews conducted with selected participants representing various segments of the building materials industry. Surveys

were administered electronically, while interviews were conducted face-to-face or via telecommunication platforms, allowing for the collection of firsthand insights and experiences directly from the stakeholders.

I. **Surveys:** Surveys served as a primary data collection method, allowing for the systematic gathering of responses from participants across different sectors of the building materials industry. The surveys were designed to elicit quantitative data on participants' perspectives, experiences, and opinions regarding customs duties on building materials importation in Nigeria. Electronic administration of surveys facilitated widespread participation and rapid data collection, while also ensuring confidentiality and anonymity for respondents.

II. **Interviews**: In addition to surveys, interviews were conducted with key stakeholders within the building materials industry to obtain in-depth qualitative insights. Face-to-face interviews were conducted with select participants, allowing for nuanced discussions and exploration of complex issues related to customs duties and importation practices. Interviews conducted via telecommunication platforms provided flexibility and accessibility, enabling participation from stakeholders located in different geographic regions.

During the interviews, detailed notes were taken, and with participants' consent, the interviews were recorded for further reference. This ensured accuracy in capturing participants' responses and allowed for thorough analysis and interpretation of the qualitative data collected.

3.5.2. Secondary Sources

Secondary data was gathered from existing literature, reports, publications, and official documents related to customs duties, trade policies, and the construction sector in Nigeria. Academic databases such as Google Scholar, ResearchGate, and other reputable sources were utilized to access scholarly articles, journals, and reports pertinent to the research topic. Additionally, government publications, industry reports,

and trade publications were consulted to supplement the primary data collection efforts and enrich the analysis.

I. **Academic Databases and Literature Review:** The conducted a comprehensive review of academic literature to contextualize the study within existing research frameworks and theories. Academic databases such as Google Scholar and ResearchGate were systematically searched using relevant keywords and search terms related to customs duties, importation practices, and the construction industry in Nigeria. This literature review provided valuable insights into the historical, economic, and policy contexts surrounding customs duties on building materials importation, informing the development of research questions and hypotheses.

II. **Government Reports and Industry Publications:** In addition to academic sources, government reports, policy documents, and industry publications were consulted to gather data on trade policies, regulatory frameworks, and market dynamics affecting the building materials industry in Nigeria. These secondary sources provided valuable context and background information, allowing for a comprehensive understanding of the research topic and facilitating evidence-based analysis and interpretation of the findings.

3.6. Data Collection Instrument

The primary data collection instruments included structured questionnaires and interview guides specifically designed to elicit relevant information pertaining to the impact of custom duties on building materials importation.

3.6.1. Structured Questionnaires:

The structured questionnaire was meticulously crafted to address key research objectives and hypotheses. It encompassed a mix of closed-ended and open-ended questions, strategically designed to capture both quantitative data for statistical analysis and qualitative insights for deeper understanding.

I. **Closed-ended Questions**: These questions provided respondents with predefined response options, enabling efficient and standardized data collection. Participants were asked to select from a range of response choices, such as multiple-choice options or Likert scales, to indicate their opinions, preferences, and experiences regarding customs duties on building materials importation.

II. **Open-ended Questions:** In addition to closed-ended questions, the questionnaire included open-ended prompts to encourage participants to provide detailed explanations, examples, and personal perspectives. This allowed for the exploration of nuanced themes and issues related to customs duties and importation practices, providing rich qualitative data for analysis.

3.6.2. Interview Guides:

The interview guides were developed to facilitate in-depth discussions with key stakeholders within the building materials industry. These guides provided a flexible framework for exploring various topics and themes related to customs duties, importation practices, market dynamics, and the perceived impacts on stakeholders.

I. **Structured Interviews**: The interview guides comprised a series of structured questions aligned with the research objectives, ensuring consistency and coherence in the data collected across different interview sessions. However, the structured nature of the interviews also allowed for probing and follow-up questions to delve deeper into specific areas of interest or ambiguity.

3.6.3. Administration of Data Collection Instruments:

The questionnaires and interview guides were administered to participants using electronic means, including email, social media platforms, and online survey tools. This approach facilitated widespread participation and ensured timely data collection from a diverse range of stakeholders across different geographic locations.

- **Electronic Distribution**: Participants were provided with access to the questionnaires and interview guides through electronic platforms, allowing for

convenient and efficient completion of the data collection instruments. Clear instructions were provided to ensure uniformity and consistency in responses, while efforts were made to maximize response rates and minimize non-response bias through follow-up communication and reminders.

- **Communication Strategy:** A comprehensive communication strategy was employed to inform potential participants about the purpose and significance of the study, as well as the procedures for completing the questionnaires or participating in interviews. Clear and concise instructions were provided along with the distribution of the data collection instruments to facilitate understanding and compliance among participants.

- **Timely Follow-Up:** To maximize response rates and ensure data completeness, timely follow-up communication was conducted with participants who had not yet responded to the questionnaires or interview invitations. Gentle reminders were sent via email or social media messages, emphasizing the importance of their participation and reassuring participants of the confidentiality of their responses

- **Confidentiality and Privacy:** Measures were implemented to safeguard participant confidentiality and privacy throughout the data collection process. Participants were assured of the confidentiality of their responses, and data security protocols were followed to protect sensitive information collected through the questionnaires and interviews.

3.7. Procedure for Data Collection

The procedure for data collection involved several sequential steps, including participant recruitment, obtaining informed consent, administering the questionnaires or conducting interviews, and recording responses accurately. Ethical considerations such as ensuring participant confidentiality and privacy were paramount throughout the data collection process, with appropriate measures implemented to safeguard sensitive information and maintain ethical standards.

3.8. Data Presentation and Analysis Method

Data collected from both primary and secondary sources were subjected to rigorous analysis using a combination of qualitative and quantitative techniques. Qualitative data analysis entailed coding, categorization, and thematic analysis to identify patterns, themes, and insights embedded within the qualitative data. Quantitative data analysis involves descriptive statistics, inferential statistics, and other quantitative techniques to analyze numerical data and explore relationships between variables. The integration of qualitative and quantitative findings allowed for a comprehensive interpretation of the data, leading to nuanced conclusions and actionable recommendations.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. Respondents' Background Information

The respondents' background information in Table 1 revealed that 63.95% of them are private construction organizations employees, while the rest, 36.05%, are employees of public organizations. Regarding their professions, 37.21% are Engineers, 33.72% are Quantity Surveyors, and the Architects and the rest 14.53% are Builders. The average respondents' years of experience are 14.31 years, with a median and modal class of 11-15years. 41.86% of the respondents' hold a bachelor's degree (BSc/B. Tech), 27.33% hold a master's degree (M.Sc/M.Tech), 16.86% hold a higher national diploma (HND), 11.63% had a postgraduate diploma (PGD), and the rest 2.33% hold with a doctorate (Ph.D.). This section showed that the participants are experienced, academically, and professionally qualified and have the requisite knowledge to make a meaningful contribution to this study's objective.

Table 1 Respondents' background information

Category	Classification	Frequency	Percentage
Ownership of the organization	Public	62	36.05%
	Private	110	63.95%
Profession of respondents	Architects	25	14.53%
	Builders	25	14.53%
	Engineers	64	37.21%
	Quantity Surveyors	58	33.72%
Years of experience	5 - 10years	35	20.35%
	11-15 years	65	37.79%
	16-20 years	43	25.00%
	Above 20	29	16.86%
Highest academic qualification	HND	29	16.86 %
	PGD	20	11.63 %
	BSc/B.Tech	72	41.86 %
	M.Sc/M.Tech	47	27.33

			%
	PhD	4	2.33%
Professional status	Corporate member	153	88.95 %
	Probationer member	19	11.05 %

Source: Field Survey, 2025

4.2. Level of Implementation of KM Practices in the Current Organizations

The respondents' background information in Table 1 revealed that 63.95% of them are private construction organizations employees, while the rest, 36.05%, are employees of public organizations. Regarding their professions, the result shows that 19.77% of the respondents stated that the KM implementation level in their organizations is very low, followed by 27.91% stated the low level of KM implementation. A moderate level of the application was indicated by 23.84% of the respondents. A high level and a very high level of KM implementation were indicated by 16.28% and 12.21% of the respondents, respectively (Figure 3). These findings show that the implementation level of KM practices is still generally low. It further shows that KM is still in the infancy in Nigerian and, by extension, other developing countries of Africa and beyond. KM implementation is still being hindered by certain factors which affect the operation and functioning of construction organization in Nigeria. A larger proportion of the construction organizations in Nigeria are SMEs and lack proper structures to encourage Knowledge management. This result further reveals why some organizations are doing well while others are not and why some companies die off within a short time of establishment. Thus, KM is one of the keys to organizational survival and achieving strategic competitive superiority.

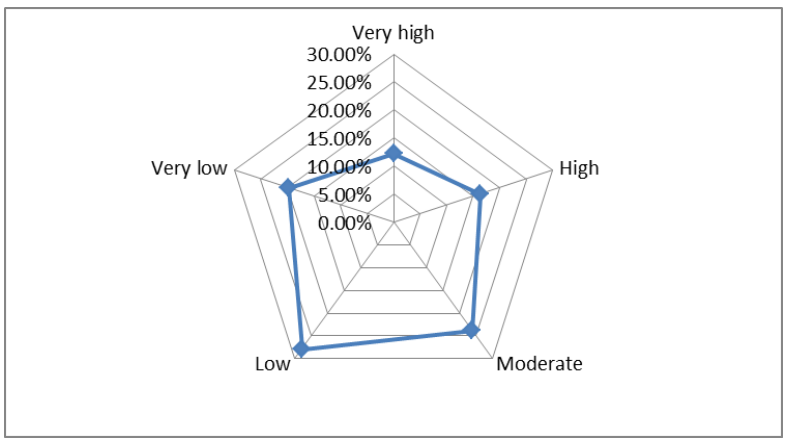


Figure 3. Level of implementation of KM in the organisation

4.3. Benefits of KM Practices to Construction Organizations

The suitability and factorability of the gathered data for factor analysis were first carried out. The sample size, number of variables, commonalities, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of sphericity

were checked for adequacy and suitability, and factorability before carrying out the factor analysis. Regarding the number of variables, there is yet to be an agreement among researchers on what number of variables should be suitable for FA, making the 22 variables adequate. Similarly, based on the suggestions of Pallant (2013), Hair et al. (2010), Bryant & Yarnold (1995), and Tabachnick & Fidell (2007), the sample size of 172 is adequate for FA. Furthermore, as long as the communalities are high, model error is low and the number of expected factors is relatively small (Preacher & MacCallum, 2002).

E. Eze, Idiake, et al. (2018) submit that variables with communalities figure of ≥ 0.5 fits well in the construct with other variables. The average communalities value of the tested variable is 0.647, with maximum and minimum values of 0.963 and 0.500, respectively. The KMO value of 0.763 was obtained, and this is higher than the cut-off score of 0.50 suggested by (Field, 2005; Hair et al., 2010). Similarly, for the Bartlett test carried out, a chi-square value of 2061.678, df=231, and p-value of 0.000 were obtained. It supports Tabachnick and Fidell (2007) and Field (2005) regarding Bartlett's test's P-value. With the result of Bartlett's test of sphericity, it can be concluded that there is a patterned relationship between the variables (E. Eze, Idiake, et al., 2018). The data gathered were concluded to be suitable and adequate for factor analysis, based on the initial tests. Following the factorability confirmation, factor analysis was consequently executed.

4.3.1. Principal Component Analysis (PCA) and Factor Extraction

Factor analysis was carried out using principal component analysis (PCA) with varimax rotation as the extraction method. Based on the PCA and varimax rotation, six factors were extracted and accounted for about 62.44% of the total cumulative variance. These were based on the factors with eigenvalues ≥1. The final statistics of PCA and varimax rotation, which accounted for 62.44%, fulfilled the propositions of (Cole & Sterner, 2000; Pallant, 2013) concerning the extracted factors which are expected to be greater than 50%; and the 60% proposed by Hair et al. (2010). In addition to the PCA statistics, only factors with a factor loading of ≥0.50 were retained in line with Spector's statement (2011) as shown in Table 2.

A critical observation of the scree plot (Figure 4) shows that a break occurred after the sixth factor (at the 7th factor). It shows that factors with Eigenvalues more significant than 1 occur before the 7th factor when the break (slope) occurred. According to Costello & Osborne (2015), the point where the break occurs should not be included. Therefore, only the six components that occurred before the break were suitable for extraction and were subsequently retained. They capture much of the variance than the remaining components (E. Eze, Idiake, et al., 2018). The PCA statistics and scree plot, therefore, justify the six factors extracted.

Table 2 Benefits of KM practices to construction organizations

	Component

	1	2	3	4	5	6
Improves firms' competitive advantages	0.973					
Improvement in productivity	0.973					
Reduction in errors and mistakes of past projects	0.965					
The efficiency of firms will improve	0.956					
leads to organizational growth	0.863					
reduce risks of uncertainty		0.693				
sharing of specialist expertise		0.665				
Prevent reinvention of the wheel		0.587				
improvement in communication skills		0.573				
innovation and creativity			0.702			
improve company revenue drive and profitability			0.629			
improves project performance			0.540			
it reduces training cost			0.507			
reducing the time and cost of solving problems				0.715		
improving the quality of the solutions				0.546		
training benefits of new employee				0.517		
job analysis and specification					0.732	
better and faster decision making					0.632	
minimizing the need to consult past projects					0.528	
Opportunities for repeat patronage						0.675
Increased customer satisfaction						0.534
Eigenvalues	5.23	2.86	1.80	1.51	1.24	1.10
% of Variance	23.76	13.02	8.18	6.84	5.62	5.02
Cumulative % of the variance	23.76	36.78	44.96	51.80	57.42	62.44
number of extracted variables	5	4	4	3	3	2

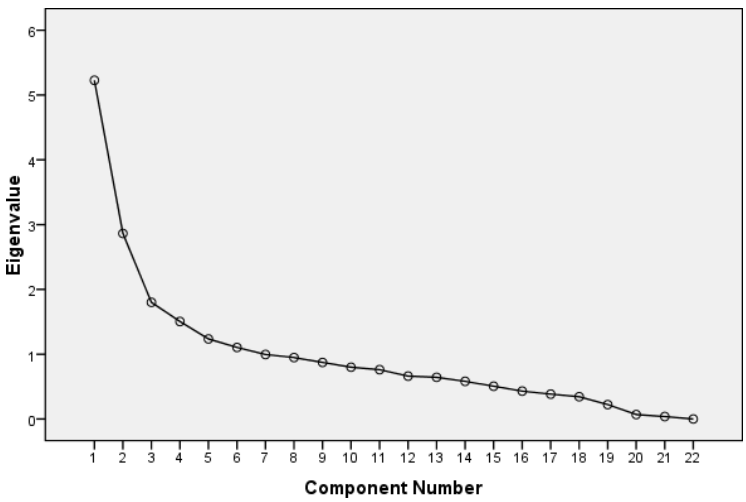


Figure 4. Screen plot of factor extraction

4.3.2 Naming of cluster and discussion of extracted factors

The naming of the FA cluster was influenced by the components' latent characteristics loaded under the components. Though it was difficult to give a proper name, consideration was given to the variable(s) with the highest factor loading (FL) among the variables that loaded under a component.

Results in Table 2 show that five items loaded strongly under the first component accounted for about 23.76% of the total variance of the retained variables, which includes: improves firms' competitive advantages (FL =0.973), improvement in productivity (FL=0.973), reduction in errors and mistakes of past projects (FL=0.965), the efficiency of firms will improve (FL=0.956) and leads to organizational growth (FL=0.863). This component was named *'Improve the firm's competitive position'* after examining the variables' characteristics. KM practices, when effectively implemented, could influence the overall productivity of an organization. This is because the previous mistake, errors, and shortcomings are not repeated, thus leading to better efficiency of the workforce and the organization. KM improves a firm's efficiency, helps achieve company growth performance, guarantees increased and sustainable productivity and performance of organizations (Ko & Dennis, 2011; Osabutey & Jin, 2016; Suhana et al., 2020; Yusof & Bakar, 2012), hence improve its competitive advantages to survive in the competitive construction industry.

The second component was named '*Risks reduction and better collaboration'* following a cursory examination of the latent characteristics of the strongly loaded items unto it. This component four items and accounted for 13.02% of the total variance explained. The items that loaded unto this component include: reduce risks of uncertainty (FL=0.693), sharing of specialist expertise (FL=0.665), Prevent reinvention of the wheel (FL=0.587), and improvement in communication skills (FL=0.573). KM practices encourage collaborations and communication between organizations. There is the minimization of risks and uncertainty due to the avoidance of delays in reinventing the wheels. It encourages the sharing of expertise experiences, which forms the bulk of tacit knowledge. This knowledge is created and converted to explicit knowledge for record purpose and reused in times of need for better performance and risk reduction. During the collaboration, the company remains afloat in a competitive industry like the construction industry. KM reduces risks of uncertainty (Alhaji et al., 2013) by facilitating cooperation, collaboration, a community of practice, and continuous work and opportunities for future work with the same client for a longer time (Khalfan et al., 2010). KM's application among middle and front-line workers will influence communication and technical skills (Ko & Dennis, 2011).

The third component, named '*Encourages innovation and profitability',* accounted for 8.18% of the total variance explained and comprised four items. The items included under these components are innovation and creativity (FL=0.702), improve company revenue drive and profitability (FL=0.629), improves project performance (FL=0.540), and reduce training cost (FL=0.507). The construction industry is dominated by SMEs that face many business challenges. One of which is the lack of innovation that has been described as one of the killers of most construction SMEs in developing countries, particularly in

Africa. Innovation and creativity are among the skills expected of employees for the growth and development of their employers. KM encourages innovation in a company, increasing its productivity, performance, revenue, and profitability, supporting positive growth, survival, and sustenance of construction organizations.

The fourth component, *'Faster problem solving'*, has three items accounting for about 6.84% of the total variance explained. These items include reducing the time and cost of solving problems (FL=0.715), improving the quality of the solutions (FL=0.546), and training benefits of new employees (FL=0.517). KM practices enable construction firms to do a post- construction review where data related to lessons learned are mined and recorded for reuse. This helps improve the quality of solutions and decisions for future projects and reduces the cost of training new employees and engaging external experts. This finding is in line with previous studies' results (Alhaji et al., 2013; Chou et al., 2012; Ruuska & Vartiainen, 2005; van Donk & Riezebos, 2015; Von Krogh, 2020).

Three factors loaded under the fifth component named *'improves project pricing'* and account for 5.62% of the total variance explained. The three items are job analysis and specification (FL=0.732), better and faster decision making (FL=0.632), and minimizing the need to consult past projects (FL=0.528).

KM decides on current projects quickly and faster by providing historical records of previous construction contracts and project documents where references can be made with little effort and less stress. Proposed projects can be appropriately evaluated and analyzed and then priced adequately with the best rates possible to gain a better advantage during tender evaluation. When new tenders are adequately priced, there is the possibility of the construction organization to be awarded the project. It is one of the core impacts of knowledge management on organizations. Reasonable rates of work items of construction projects give a contractor an edge over its competitors and improve its chance of being awarded more jobs. This improves the survival and sustenance of construction contractors.

This sixth component, '*improve client satisfaction and patronage',* contains two items and accounts for 5.02% of the total variance explained and the 62.44% cumulative variance of the extracted factors. The items are opportunities for repeat patronage (FL=0.675) and increased customer satisfaction (FL=0.534). A cursory examination of these items' characteristics shows they are closely related to the need to secure repeated jobs and client satisfaction. KM practices enable construction organizations to continue being in business as a result of sustainable client satisfaction. Clients are tended to go back to contractors that satisfied them in terms of cost, time, quality, and other performance requirements of their previous construction projects. An organization that continuously satisfies its customers will experience sustainable patronage, which would increase revenue and profitability, growth, and would be on a better advantage over its competitors. Thus, they would experience a sustainable advantage and survival in the industry.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

Knowledge management (KM) has emerged as a vital discipline across industries, especially in the construction sector where projects are complex, dynamic, and involve multiple stakeholders. In the construction industry, productivity is often challenged by knowledge loss, communication gaps, project complexities, and fragmentation of information across different teams and phases.

This study explored the relationship between knowledge management practices — such as knowledge creation, storage, sharing, and application — and construction productivity. Through literature reviews, empirical data collection (e.g., surveys and interviews), and analysis, it was found that effective KM practices significantly influence the productivity levels on construction sites.

Key findings revealed that:

- **Knowledge creation** (e.g., innovation through brainstorming sessions, lessons-learned workshops) enables the discovery of better construction methods and problem-solving strategies, leading to improved task execution.
- **Knowledge storage** (such as documentation, use of databases, and project management software) prevents the loss of critical information and ensures continuity even when personnel turnover occurs.
- **Knowledge sharing** (formal meetings, communities of practice, mentoring) promotes faster decision-making, reduces errors, and fosters collaboration.
- **Knowledge application** ensures that existing knowledge and best practices are utilized effectively to streamline processes and avoid duplication of effort.

Moreover, barriers such as organizational culture, lack of technological infrastructure, resistance to change, and inadequate training were identified as impediments to successful knowledge management, consequently hindering construction productivity. Companies with a proactive approach to KM exhibited better project outcomes, reduced costs, timely delivery, and enhanced worker satisfaction.

Overall, the evidence suggests that embedding KM practices into construction project management can lead to substantial gains in productivity, efficiency, and competitive advantage.

5.2 Conclusion

The study concludes that knowledge management is not just an optional enhancement but a critical necessity for boosting construction productivity. The findings reinforce that:

- Effective knowledge management practices can bridge the gap between knowledge-rich experiences and real-time construction execution.
- Construction productivity suffers significantly in organizations where knowledge is not systematically managed or where knowledge flow is restricted.
- Organizations that invest in KM strategies, such as adopting new technologies (e.g., Building Information Modelling, cloud databases), encouraging collaborative cultures, and offering training programs, realize better productivity outcomes.

Moreover, the dynamic and project-based nature of construction work, where different teams often come together temporarily, underscores the urgent need for mechanisms that ensure that valuable knowledge is captured, shared, and reused. Knowledge management ensures that lessons learned on one project can enhance future projects, creating a culture of continuous improvement.

The conclusion also highlights that the success of KM initiatives is closely tied to leadership commitment, a supportive organizational culture, appropriate technological tools, and employee engagement. Without these elements, KM efforts may be fragmented or fail entirely, thus not contributing meaningfully to productivity.

Ultimately, a robust KM framework offers construction companies a strategic advantage by enhancing decision-making, promoting innovation, reducing redundancy, improving risk management, and optimizing resource allocation.

5.3 Recommendations

Based on the findings and conclusion, the following recommendations are proposed to maximize the positive impact of knowledge management on construction productivity:

1. **Develop a Formal Knowledge Management Strategy:** Construction firms should design and implement a comprehensive KM strategy tailored to their organizational goals. This strategy should clearly define how knowledge will be created, captured, stored, shared, and applied across all projects.

2. **Invest in Technology and Digital Infrastructure:** Adoption of modern KM tools such as cloud-based databases, Building Information Modeling (BIM), enterprise resource planning (ERP) systems, and collaboration platforms (e.g., Microsoft Teams, Asana) can significantly enhance knowledge storage and sharing.

3. **Foster a Knowledge-Sharing Culture:** Organizations must encourage openness and collaboration by establishing trust, recognizing and rewarding knowledge-sharing behaviors, and promoting an environment where learning from mistakes is valued.

4. **Provide Continuous Training and Capacity Building:** Regular training programs should be conducted to equip employees with skills in knowledge management tools and practices. Special attention should be given to mentoring programs, where experienced employees guide newer workers.

5. **Institutionalize "Lessons Learned" Systems:** Companies should mandate the documentation of lessons learned at the end of each project phase or after critical incidents. This knowledge should be easily retrievable for future reference.

6. **Appoint Knowledge Managers or Champions:** Dedicated personnel or teams should be responsible for overseeing KM initiatives, ensuring that knowledge assets are curated, updated, and made accessible to all relevant stakeholders.

7. **Integrate KM Practices into Daily Workflows:** Knowledge management should not be treated as an additional task but be seamlessly integrated into everyday processes — e.g., through structured meetings, digital documentation standards, and project reviews.

8. **Measure and Monitor KM Impact:** Firms should establish metrics to monitor the effectiveness of KM practices (e.g., number of best practices applied,

reduction in project rework, employee satisfaction with KM tools) and make improvements as necessary.

9. **Promote Inter-Organizational Knowledge Exchange**: Collaborations with academic institutions, industry consortia, and partnerships with other firms can facilitate the inflow of external knowledge and industry best practices.

10. **Overcome Resistance to Change**: Management should actively address resistance by clearly communicating the benefits of KM, involving employees in KM initiatives, and showing tangible outcomes where KM has led to project success.

REFERENCES

Akinola, A(2012). Impact of Total Quality Management (TQM) On Nigerian Construction Firms. Proceedings 4th West Africa Built Environment Research (WABER) Conference. July 24-26. Abuja, Nigeria, 225- 235.

Abdullah, M. S., Nagapan, S., Rahman, I. A., Asmi, A., & Latif, I. (2019). The significance of knowledge management practices in improving construction project performance. *International Journal of Sustainable Construction Engineering and Technology, 10*(1), 15–24. https://doi.org/10.30880/ijscet.2019.10.01.003

Adebayo A. Oladapo. (2017). an Investigation into the Use of ICT in the Nigerian Construction Industry. ITcon Vol. 12, pg. 261

Ajmal, M. M., Helo, P., & Kekäle, T. (2010). Critical factors for knowledge management in project business. *Journal of Knowledge Management, 14*(1), 156–168. https://doi.org/10.1108/13673271011015633

Amran Rasli et al. (2024). Factors that Influence the Implementation of Knowledge Management and Information Technology Infrastructure to Support Project Performance in Construction Industry. International Business Management Conference. University Tenaga Nasional, Malaysia.

Anumba, C. J., Egbu, C., & Carrillo, P. (2020). Knowledge management in construction. *Oxford: Blackwell Publishing.*

Arif, M., & Karam, A. (2001). Architectural practices and their use of IT in the United Arab Emirates. *International Journal of Construction Information Technology, 9*(1), 21–34.

Carrillo, P., Robinson, H., Al-Ghassani, A., & Anumba, C. (2024). Knowledge management in UK construction: Strategies, resources and barriers. *Project Management Journal, 35*(1), 46–56. https://doi.org/10.1177/875697280403500106

Chang Kang. (2011). Optimizing Construction Planning and Scheduling by Virtual Prototyping Enabled Resources Analysis. PhD Thesis. The Hong Kong Polytechnic University.

Dave, B., Koskela, L., & Kiviniemi, A. (2013). Implementing lean construction: Understanding and action. *Proceedings of the 21st Annual Conference of the International Group for Lean Construction (IGLC 21)*, Fortaleza, Brazil, 528–537.

Egbu, C. O. (2004). Managing knowledge and intellectual capital for improved organizational innovations in the construction industry: An examination of

critical success factors. *Engineering, Construction and Architectural Management, 11*(5), 301–315. https://doi.org/10.1108/09699980410558564

Egbu, C. O., & Robinson, H. S. (2005). Construction as a knowledge-based industry. In C. J. Anumba, C. O. Egbu, & P. M. Carrillo (Eds.), *Knowledge Management in Construction* (pp. 31–49). Oxford: Blackwell Publishing.

Fong, P. S. W. (2005). Co-creation of knowledge by multidisciplinary project teams. *Proceedings of the CIB W102 International Conference on Information and Knowledge Management in a Global Economy,* Lisbon, Portugal.

Fong, P. S. W., & Wong, K. Y. (2009). Knowledge sharing in a multi-cultural setting: A case study. *Knowledge Management Research & Practice, 7*(1), 5–16. https://doi.org/10.1057/kmrp.2008.34

Gustav Pilsmo. (2010). Knowledge Management in Projects - a Study of Small Consulting Firms. Bachelor Thesis. Lulea University of Technology.

Justin Bong Chunn Tat. (2009). Factors Affecting In The Preparation Of Construction Work Schedule. Master Thesis. Universiti Teknologi Malaysia.

Kasim, N., Anumba, C., & Dainty, A. (2005). Improving materials management practices on fast-track construction projects. *Engineering, Construction and Architectural Management, 12*(5), 424–444. https://doi.org/10.1108/09699980510608846

Kasimu Mohammed Alhaji, et al. (2023). Knowledge Sharing Practices in Construction Organization in Nigeria. International Journal of Engineering Research & Technology (IJERT). Vol. 2 Issue 1

Laura Tupenaite. (2008). Knowledge Management Model for Construction Projects. The 8th International Conference "RELIABILITY and STATISTICS in TRANSPORTATION and COMMUNICATION. 15-18 October.

Lisa Low. (2010). The Development of Knowledge Sharing Culture in Construction Industry. Department of Property Management. Universiti Teknologi Malaysia.

Love, P. E. D., Fong, P. S. W., & Irani, Z. (2005). Management of knowledge in project environments. *Oxford: Elsevier Butterworth-Heinemann.*

Maqsood, T., & Finegan, A. (2009). A knowledge management approach to innovation and learning in the construction industry. *International Journal of Managing Projects in Business, 2*(2), 297–307. https://doi.org/10.1108/17538370910949238

Mikael Ericsson. (2011). Knowledge Management in Construction: An approach for Best Practice Diffusion in Skanska Sweden AB. Master Thesis. Chalmers University of Technology, Sweden.

Nonaka, I., & Takeuchi, H. (2015). The knowledge-creating company: How Japanese companies create the dynamics of innovation. *New York, NY: Oxford University Press.*

Pathirage, C. P., Amaratunga, D. G., & Haigh, R. P. (2007). Tacit knowledge and organizational performance: Construction industry perspective. *Journal of Knowledge Management, 11*(1), 115–126. https://doi.org/10.1108/13673270710728277

Rezgui, Y., & Miles, J. (2010). Harvesting knowledge in construction: From theoretical foundations to business opportunities. *Routledge.*

Robinson, H., Carrillo, P., Anumba, C., & Al-Ghassani, A. (2005). Knowledge management practices in large construction organizations. *Engineering, Construction and Architectural Management, 12*(5), 431–445. https://doi.org/10.1108/09699980510608855

Rosli Mohammad Zin,et al.(2010). Resource-Driven Scheduling Implementation in Malaysian Construction Industry. International Journal of Sustainable Construction Engineering & Technology.Vol 1, No 2

Salisu, S., & Abu-Bakr, A. S. (2019). Effect of knowledge management on construction project performance: A review. *International Journal of Civil Engineering and Technology, 10*(2), 1088–1098.

Siti Fazreena.(2012).Modeling The Knowledge Management Processes For Planning And Scheduling Of Construction Projects Based On State-Of-The-Art Technology. Master Thesis. UTHM, Malaysia.

Songul Dayi. (2010). Scheduling Delay Analysis in Construction Projects: A Case Study using Time Impact Analysis Method. Master Thesis. Middle East Technical university

Suresh, S., Renukappa, S., & Egbu, C. (2009). Knowledge management processes in construction: A case study. *Proceedings of the CIB World Building Congress*, Cape Town, South Africa.

Tan, H. C., Carrillo, P. M., Anumba, C. J., Kamara, J. M., & Bouchlaghem, D. M. (2010).
Development of a methodology for live capture and reuse of project knowledge

in construction. *Journal of Management in Engineering, 26*(1), 18–27. https://doi.org/10.1061/(ASCE)0742-597X(2010)26:1(18)

Ute Quink. (2008). an Exploration of knowledge Management and Intellectual Capital in a Nonprofit Organizatiownal Context. Master Thesis.QUT, Australia.

Wamuziri, S. (2001). Knowledge management and productivity in construction. *Proceedings of the 17th Annual ARCOM Conference,* University of Salford, UK, 2, 587–596.

Winnie Bong. (2011). Implementation of Knowledge Sharing in Construction Industry Firms. Master Thesis.UTM, Malaysia.

Wong, K. Y., & Aspinwall, E. (2004). Characterizing knowledge management in the small business environment. *Journal of Knowledge Management, 8*(3), 44–61. https://doi.org/10.1108/13673270410541033

Zhang, J., & Ng, F. (2012). A review of knowledge management in the construction industry. *Journal of Information Technology in Construction, 17*, 279–293