

# **ASSESSMENT OF THE BARRIERS TO KNOWLEDGE MANAGEMENT PRACTICES AMONG CONSTRUCTION ORGANISATIONS IN ABUJA, NIGERIA**

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## **ABSTRACT**

Construction projects are information-laden and construction organisations require a great deal of work to ensure that information is properly recorded and archived for use in future projects. In spite of the efforts put into managing this knowledge information, construction projects suffer from time and cost overruns, rework, poor quality work, and battered reputation of project's stakeholders, all these resulted from distorted and loss of information; leading to reinventing the wheel in terms of poor performance and failures. Thus, this paper assessed the barriers to knowledge management (KM) practices in Nigerian construction organisations. This study was carried out using a survey design approach and well-structured questionnaire administered randomly to construction organisations. Data obtained was analysed using; Percentages, Relative Important Index (RII), Kruskal-Wallis H test and Mann-Whitney U test. The major barriers to knowledge management in the construction organisations identified by this study are: - lack of formal review and learning processes, poor communication network, lack of adequate technology, low level of training/intellectual capital, lack of IT support facilities, problem of converting knowledge, time constraint, and lack of coordination. A divergent view was observed among large, small and medium organisations, but a convergence of opinions observed between small and medium organisations. However, this study concluded that barriers to practicing of knowledge management among categories of construction organisations in Nigeria, was obvious and attributable to ineffective and inefficient practicing of KM system in the construction sector. It was recommended that adequate technology and communication network to support knowledge capturing, recording, and archiving is needed.

**Keywords:** Barriers, Construction industry, Construction organisation, Knowledge management, Nigeria.

## **INTRODUCTION**

The construction industry is a powerful sector that provides job and stimulates growth, it contributes to the economic development of any nation and impact positively on other non-construction-related sector (Meshksar, 2012; Nnadi *et al.*, 2016; Onyeagam *et al.*, 2019). Due to the nature of the construction industry, construction organisations are faced with a lot of competition for their survival. The industry success and growth anchored on the ability to adopt to the dynamics of the construction market (Yusof and AbuBakar, 2012). The Nigerian construction industry is confronted with a lot of performance issues, such as poor-q

-up innovative activities (Alhaji *et al.*, 2013a; 2013b). Based on these the Nigerian construction firms are under tremendous pressure to improve their efficiency and performance in order to eliminate delays, time overrun, cost overrun, unnecessary variations, rework, loss of profit, and loss of business that characterised the sector. Thus, knowledge management has been

-used in future and subsequent projects (Guribie *et al.*, 2018; Alhaji *et al.*, 2013a, 2013b). Thus, the performances of these organisations are affected and their future threatened (Yusof and Abubakar, 2012). Subsequent construction projects are facing the same problems or mistakes or errors the previous projects witnessed, because they are reinventing the wheel (Oke *et al.*, 2013; Tan, 2015; Leal *et al.*, 2017). Furthermore, construction organisations are facing great challenge in handling, storing, organising and disseminating effectively all the information needed to design and build a major facility, and this is affecting construction industry performance. Therefore, there is a need for the efficient and effective knowledge management in construction organisations (Becerik, 2004; Leal *et al.*, 2017).

Previous studies on Knowledge management emphasised only multinational companies mostly in developed countries. The research work on KM barriers centred on the three groups of organisations in Nigeria is lacking. Construction organisations are different in sizes as well as the specific features such as small and medium enterprises (SMEs) and large organisation that could affect knowledge management. It is against this backdrop that this study set to assess barriers to knowledge management practices in the Nigerian construction organisations (large, medium and small-scale organisations).

## **KNOWLEDGE SHARING PRACTICES IN CONSTRUCTION FIRMS**

According to Ohiorenoya and Eboreime (2014), knowledge management is a veritable tool for the improvement of services, process, for growth and productivity. In the construction industry, projects are being tagged to be complex, diverse and non-standard in nature; it therefore requires employees to adapt knowledge, experiences and lessons gained from previous projects to quickly confront new conditions, work contents and challenges emanating from competitive environment in which they exist (Clough *et al.*, 2000; Hanisch *et al.*, 2009; Bakker *et al.*, 2011). Most of the problems generated, solutions proffered, experience gained and know-how in the previous projects are in the minds of the Engineers, Quantity surveyors and other experts as they emanate during the construction phase of a project (Alhaji *et al.*, 2013b; Ohiorenoya and Eboreime, 2014), thus, these are intangible and invisible to the eyes. The knowledge and experience that are intangible and invisible are resident in the mind of the professionals and is called tacit knowledge

-use. Sheehan *et al.* (2005) found that more than 80% of the useful knowledge generated in construction projects are tacit and cannot be written down. Thus, according to Alhaji *et al.* (2013a; 2013b), a lot of knowledge exist and characterised the civil engineering construction firms, employees retire or leaves or are sacked, leaving the organisation with their tacit knowledge. This tacit knowledge is a potential source of competitive advantage that is required by these construction firms.

The mode of practice of knowledge sharing and management in construction organisation reported by Alhaji *et al.* (2013b) are fact to face, site meeting, mentoring and tutoring, projects briefing and interviewing sessions, and internal training courses. According to Oke *et al.* (2013), the practice of knowledge sharing and management available to of construction firms include colleagues experience is the highest source of knowledge, text books, interaction with outside party, and the use of phones followed.

### **Barriers to Knowledge Management in the Construction Organisations**

KM is vital to successful project performance but its implementation is not without hitches. Organisational culture is one of the most crucial factors contributing to the success of a KM project, and 'perhaps the most difficult constraint that knowledge managers must deal with (Davenport *et al.*, 1998; Whelton *et al.*, 2002). Thus, organisational culture is a key barrier that has not yet been addressed in most organisations (Whelton *et al.*, 2002). According to Marshall and Sapsed (2000), knowledge management is both a technical problem involving the use of IT

-based industry.

Information overload, lack of time to share knowledge, not using technology to share knowledge effectively and difficulty in capturing tacit knowledge are few challenges in implementing KM (Carrillo *et al.*, 2000). The main barriers to implementing effective knowledge management include not having sufficient time, organisational culture, lack of standard work processes and insufficient fund (Carrillo and Chinowsky, 2006; Kazi *et al.*, 1999). Kasim and Saeed (2018) identified lack of coordination, poor utilisation of communication network, absence of firms' structural approach, and cultural elements as major barriers to knowledge management in the construction industry. Oke *et al.* (2013) affirmed that the top major barriers to knowledge management in construction include; funding, lack of time and understanding of KM, lack of proper technical expertise, lack of adequate and up to date data, lack of successful km model in the construction industry, lack of effective communication among construction professionals among others. The summary of the barriers identified from literature is shown in Table 1.

**Table 1: Barriers to Knowledge Management**

S/N	Barriers	Sources
1	Lack of coordination	Kasim and Saeed (2018)
2	Poor communication networks	Kasim and Saeed (2018)
3	Absence of firms' structural approach	Kasim and Saeed (2018)
4	cultural elements	Carrillo <i>et al.</i> (2006), Oke <i>et al.</i> (2013), Kasim and Saeed (2018)
5	Lack of 'voice' of the user group(s)	(Whelton and Ballard, 2002), Whelton <i>et al.</i> (2002)
6	Inadequate stakeholder involvement and participation	(Whelton and Ballard, 2002), Whelton <i>et al.</i> (2002)
7	Poor group dynamics	(Whelton and Ballard, 2002), Whelton <i>et al.</i> (2002)
8	Misunderstanding of client organization and culture	(Whelton and Ballard, 2002), Whelton <i>et al.</i> (2002)
9	Lack of client education of process	(Whelton and Ballard, 2002), Whelton <i>et al.</i> (2002)
10	Lack of formal review and learning processes	(Whelton and Ballard, 2002), Whelton <i>et al.</i> (2002)
11	Lack of Time (Time constraint)	Carrillo and Chinowsky (2006), Leal <i>et al.</i> (2017), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)
12	Trying to solve large problems	Carrillo and Chinowsky (2006), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)

	-Disciplinary Teams	Carrillo and Chinowsky (2006), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)
16	Uniqueness of construction Projects	Carrillo and Chinowsky (2006), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)
17	Lack of Learning	Carrillo and Chinowsky (2006), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)
18	Lengthy Time Period	Carrillo and Chinowsky (2006), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)
19	lack of IT support facilities	Carrillo and Chinowsky (2006), Kazi <i>et al.</i> (1999); Oke <i>et al.</i> (2013)
20	Lack of top management support	Robinson <i>et al.</i> (2005), Oke <i>et al.</i> (2013), Whelton <i>et al.</i> (2002)
21	Mainly a male sector	Leal <i>et al.</i> (2017)
22	High turnover	Leal <i>et al.</i> (2017)
23	Low level of training/intellectual capital	Leal <i>et al.</i> (2017)
24	absence of incentives to promote sharing knowledge and insight among employees;	Cameron (2002); Polyani (2011)
25	Little time or attention is given to identifying lessons learned from past project failures and successes;	Cameron (2002); Polyani (2011)
26	Assumptions about new projects are not challenged	Cameron (2002); Polyani (2011)
27	Organization hires and promotes individuals based on technical expertise alone	Cameron (2002); Polyani (2011)
28	Management is reluctant to talk about projects that did not work well	Cameron (2002); Polyani (2011)

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**Source:** *Researcher's Compilation of Literature (2020)*

## RESEARCH METHODOLOGY

This study adopted a survey research approach via a well-structured questionnaire, self-administered on construction professionals within organisations based in Abuja and selected using simple random sampling techniques in order to assess the barriers inhibiting their knowledge management practices. The premise for selecting Abuja is that, it is the administrative headquarters of Nigeria with a lot of construction projects being executed by Federal government and Private developers which attract a lot of professionals, investors and developers to the country's capital. According to Aje *et al.* (2015), a lot of companies, professionals and professional bodies are attracted and situated their head offices or branches in Abuja.

The opinions of the professional within the construction firms regarding the subject of this study were gathered who are construction professionals, experience on construction projects and operations of the firms. These construction professionals are the key agents for ensuring that knowledge is captured and shared in the organisations, and these organisations cut-across small, medium and large-scale organisations involved in building construction projects.

The number of these organisations is 131, this comprise of (28 small, 4 medium and 99 large organisations). In order to arrive at the sample size, 5 respondents were proposed to be sample from the small firms and 10 from the medium firms. One person each was proposed to be sample

-30% and above is ideal. Thus, response rate of 55.91% was adjudged adequate, and following this decision the all the analyses done on the gathered data were carried out subsequently.

The questionnaire has two divisions in design; the first section sought to gather information about respondents' profile and organisational background, while the second section sought to gather information on the barriers by the construction practitioners within each group of organisations. The questionnaire used a 5-point Likert scale with 5 being strongly agree and 1 being strongly disagree. The Likert scale was adopted as it is easy to use and reduces uncertainty, confusion and misunderstanding (Manu, 2015). A pilot survey was carried out among five (5) randomly selected construction-based professionals within the study area; this is in order to eliminate ambiguity and improve clarity of questions asked. Based on their feedback the final draft of the questionnaire was prepared. The reliability and validity of the research instrument was determined using Cronbach Alpha Test for Reliability and validity. The gathered data on the barriers to KM have high level of reliability and internal consistency as the alpha value obtained is 0.881, which is well above the recommended value of 0.70. Oyedele *et al.* (2003) posits that an alpha value of 0.7 and above implies higher and better reliability and consistency of the research instruments. Also, the closer the Cronbach's  $\alpha$  value is to 1, the higher and more reliable and consistent the data are (Aghimien *et al.*, 2018).

The data gathered was analysed using: Percentages, Relative Important Index (RII), Kruskal-Wallis H test and Mann-Whitney U test. The data gathered on the respondents' information was analysed using percentage; the barriers to KM was analysed using RII, Kruskal-Wallis H Test was further used to determine if there is any significant difference in the view of the organisations regarding each of barriers to KM and among the 3 categories of organisations. Furthermore, Mann-Whitney U test was used to compare the views of pairs of the organisations to determine if views will differ significantly, and to confirm the result of the Kruskal-Wallis test.

**Hypothesis:** there is no statistically significant difference in the views of the construction organizations

The decision rule for using Mann-whitney U test and Kruskal-Wallis test are;

- i. Accept hypothesis; if P-value  $\geq 0.05$ ; this implies a non-significant difference
- ii. Reject hypothesis; if p-value  $< 0.05$ ; this implies a significant difference

## RESULTS AND DISCUSSION

### General information of the respondents

Table 2 is the result of the analysis of the respondents' general information. The analysis shows that 37.82% of the respondents work with the public organisation while 62.18% work with the private organisations. In terms of professionals' representation, the result revealed that Engineers

-residential building/project type. Based on the result on the respondents' general information, it was concluded that the various sizes of construction organisation are well represented, as well as the professional. Also, the professionals are equipped academically, have the requisite professional experience to give reasonable and reliable information that aided answering the research questions.

**Table 2: General Information of Respondents**

Category	Classification	Freq.	Percent	Valid Percent	Cumm. Percent
<b>Ownership of Organisation</b>	Public organisation	59	37.82%	37.82%	37.82%
	Private organisation	97	62.18%	62.18%	100.00%
	<b>TOTAL</b>	<b>156</b>	<b>100.00%</b>	<b>100.00%</b>	
<b>Respondents Profession/Responsibility</b>	Architects	19	12.18%	12.18%	12.18%
	Builders	18	11.54%	11.54%	23.72%
	Engineers	56	35.90%	35.90%	59.62%
	Quantity Surveyors	51	32.69%	32.69%	92.31%
	Others	12	7.69%	7.69%	100.00%
	<b>TOTAL</b>	<b>156</b>	<b>100.00%</b>	<b>100.00%</b>	
<b>Years of Experience</b>	1 - 5years	15	9.74%	9.74%	9.74%
	6-10 years	56	36.36%	36.36%	46.10%
	11-15years	44	28.57%	28.57%	74.68%
	16-20 years	21	13.64%	13.64%	88.31%
	Above 20	18	11.69%	11.69%	100.00%
	<b>TOTAL</b>	<b>156</b>	<b>100.00%</b>	<b>100.00%</b>	
<b>Highest Academic Qualification</b>	HND	31	19.87%	19.87%	19.87%
	PGD	27	17.31%	17.31%	37.18%
	BSc/Btech	52	33.33%	33.33%	70.51%

residential project	58	37.18%	37.18%	100.00%
<b>TOTAL</b>	<b>156</b>	<b>100.00%</b>	<b>100.00%</b>	

**Source:** *Researcher's Analysis, 2020*

#### 4.0.2 Barriers to Knowledge Management Practices in Construction Organisations

Table 3 shows the result of the analysis of the various construction organisations' perception on the barriers to knowledge management in the constructions industry sampled. From the Table, it shows that the top ten (10) barriers to KM are: Lack of formal review and learning processes (RII=0.973), poor communication network (RII=0.901), Lack of adequate technology (RII=0.863), Low level of training/intellectual capital (RII=0.835), Absence of firms structural approach (RII=0.831), lack of IT support facilities (RII=0.826), problem of Converting Knowledge (RII=0.821), Lack of client education of process (RII=0.813), Lack of Time (Time constraint) (RII=0.805), and Lack of coordination (RII=0.797). The least five (5) barriers to Knowledge management are; Lengthy Time Period (RII=0.681), Large number of SMEs (RII=0.656), Uniqueness of construction Projects (RII=0.629), Mainly a male sector (RII=0.579), Inadequate stakeholder involvement and participation (RII=0.559).

On the individual barriers these organisations views varied significantly on 50% the variables. These barriers have their P-value of less than 0.05. Also, 50% of the variables show non-significant difference; these barriers have P-value of > 0.05. This significant and non-significant result implies variability in the organisations through their professionals perceives these factors. This variation in views could be attributed to the relative understanding of knowledge management practices in the various organisational sizes. Also, Knowledge management objectives of the firms of the respondents could have also influenced their views; the practice could be different from firm to firm.



-based industry has been knowledge management (Robinson *et al.*, 2005).

**Table 3: The Barriers to Knowledge Management In Construction Organisations**

S/N	Barriers	RII	Rank	Kruskal Wallis Test	
				P-value	Decision
1	Lack of coordination	0.797	10 <sup>th</sup>	0.175	Accept
2	Poor communication network	0.901	2 <sup>nd</sup>	0.000*	Reject
3	Absence of firm's structural approach	0.831	5 <sup>th</sup>	0.000*	Reject
4	cultural elements	0.785	12 <sup>th</sup>	0.101	Accept
5	Lack of 'voice' of the user group(s)	0.773	15 <sup>th</sup>	0.086	Accept
6	Inadequate stakeholder involvement and participation	0.559	28 <sup>th</sup>	0.000*	Reject
7	Poor group dynamics	0.724	21 <sup>st</sup>	0.000*	Reject
8	Misunderstanding of client organization and culture	0.787	11 <sup>th</sup>	0.087	Accept
9	Lack of client education of process	0.813	8 <sup>th</sup>	0.112	Accept
10	Lack of formal review and learning processes	0.973	1 <sup>st</sup>	0.033*	Reject
11	Lack of Time (Time constraint)	0.805	9 <sup>th</sup>	0.110	Accept
12	Trying to solve large problems	0.717	22 <sup>nd</sup>	0.288	Accept
13	problem of Converting Knowledge	0.821	7 <sup>th</sup>	0.345	Accept
14	Large number of SMEs	0.656	25 <sup>th</sup>	0.000*	Reject
15	Multi-Disciplinary Teams	0.776	13 <sup>th</sup>	0.000*	Reject
16	Uniqueness of construction Projects	0.629	26 <sup>th</sup>	0.150	Accept
17	Lack of Learning	0.732	19 <sup>th</sup>	0.156	Accept
18	Lengthy Time Period	0.681	24 <sup>th</sup>	0.012*	Reject
19	lack of IT support facilities	0.826	6 <sup>th</sup>	0.000*	Reject
20	Lack of top management support	0.772	16 <sup>th</sup>	0.106	Accept
21	Mainly a male sector	0.579	27 <sup>th</sup>	0.402	Accept
22	High turnover	0.729	20 <sup>th</sup>	0.035*	Reject
23	Low level of training/intellectual capital	0.835	4 <sup>th</sup>	0.001*	Reject
24	Lack of adequate technology	0.863	3 <sup>rd</sup>	0.034*	Reject
25	Diverse individual culture	0.709	23 <sup>rd</sup>	0.003*	Reject
26	Organisational culture	0.760	17 <sup>th</sup>	0.105	Accept
27	Lack of adequate training	0.740	18 <sup>th</sup>	0.111	Accept
28	Lack of standard work process	0.776	13 <sup>th</sup>	0.006*	Reject

Source: Researcher's analysis, 2020

\*Pvalue<0.05

-Walis test at 95% confidence level was carried out to ascertain if there is variation in the views of each of the organisation. The result of this analysis is shown on Table 4; the test showed that there is a significant difference in the ranking of the barriers to knowledge management adoption by these construction firms. There seem to be inconsistencies and divergences in view among the various three sizes of organisation regarding variables. The P-value for the variables is 0.008 which is less than 0.05 level of significant.

Since 50% of the barriers have a P-value  $< 0.05$  and 50%  $> 0.05$  (See Table 3), the result in table 4 will be misleading if a critical examination is not done further. In order to understand the result in table 4.3 turned out to show significant difference, the RII of the barriers with Pvalue  $< 0.05$  were summed up and those with Pvalue  $> 0.05$  were also summed up. The result showed that (P-value  $> 0.05=10.510$ ; and those with P-value  $< 0.05=10.838$ ). This shows that, variables with P-value  $< 0.05$  weigh (0.328) more than those with P-value  $> 0.05$ . Thus, the hypothesis which states that there is no statistically significant difference in the views of the construction organisations, is therefore, rejected. The reason for this could be as a result of the low or even non-existence of knowledge management innovation in SMEs. Furthermore, large firms are usually more technological incline than SMEs. Some of the indigenous ones engage expatriates and the multinationals among them have appreciable level of knowledge management practice as part of their internal policies than the small and medium organisations.

**Table 4: Overall Comparison of Construction Firms' Perception of Barriers to KM**

		<b>Kruskal-Walis</b>			
<b>Barriers to KM</b>	<b>Construction firms'</b>	<b>Mean Rank</b>	<b>Chi Sq.</b>	<b>P-value</b>	<b>Decision</b>
	Small	87.22			
	Medium	89.30	7.767	0.008	Reject
	Large	65.17			

N = 56 for Small, N = 35 for Medium, N = 65 for Large, df = 2

Since the overall Kruskal-Wallis test showed a significant result for all combined groups of respondents; a series of Mann-Whitney U tests was conducted to compare perceptions between pairs of the organisations (See Table 5). Mann-Whitney U test was performed at  $p \geq 0.05$  (95% level of significance). It was observed that the pair of the small and medium organisation showed a P-value  $> 0.05$ ; this means that there is a convergence of opinion between the small and medium organisations regarding what constitutes a barrier to knowledge management. However, the pairs of the small and large, and medium and large organisations showed that P-value  $\leq 0.05$ , meaning that there is a statistically significant difference in the perception of large organisations and the SMEs regarding the barriers to knowledge management. This result shows that knowledge management is fairly being practiced in the large firms more than the small and medium organisations. The level of technology employed and network of communication available in the large firms could also have impact on the result obtained.

**-Whitney U Statistics**

Target Organisations	N	Z	Sig.	Decision
Small vs Medium	91	-0.274	0.784	Accept
Small vs Large	121	-2.717	0.007	Reject
Medium vs Large	100	-2.492	0.013	Reject

**CONCLUSIONS**

This research set out with the aim of assessing the barriers to knowledge management in construction organisations. Adopting a survey design approach, using questionnaire, and collection of data from construction organisation (small, medium and large), and study has been able to answer the main research question.

Based on the findings of the research, the study concluded that the major barriers to knowledge management in the construction organisations requiring immediate management attention are lack of formal review and learning processes, poor communication network, lack of adequate technology, low level of training/intellectual capital, absence of firms structural approach, lack of it support facilities, problem of converting knowledge, lack of client education of process, lack of time (time constraint), and lack of coordination.

A statistically significant difference was found among the subjective views of small, medium and large construction organisations. A convergence of opinion was observed between the small and medium organisations regarding what constitutes a barrier to knowledge management. A divergent view was observed between large organisations and SMEs. This implies that small and medium organisations viewed same indices as barriers to KM practices and hence to achieved efficiency and withstand competition, strategies must be put in place to mitigate those barriers, while the divergent views between large and (small and medium) organisations indicates that barriers to KM practices may not be an impediment to achieve efficiency and withstand competition.

Based on the conclusion, it is recommended that; provision of adequate technology to support knowledge capturing, recording, and archiving is paramount. This technology once provided with improved communication network, thus, ensuring effective and efficient communication among employees. Engaging of well trained and experience individuals who will competent to hoard knowledge in construction organisations. The study has added to the existing body of knowledge on KM among global construction industry. Also, it provides what could be regarded as the vital few barriers to KM which decision-makers in SMEs should focused in order to devise strategies for eliminating or avoiding them, while still not ignoring the trivial many. The limitation of this study lies in the number of samples and the location, and the findings may differ from what is obtainable from other part of the country or region.

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