

The Application of Knowledge Management in Construction Organization in Nigeria

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Abstract: The construction organizations have a deprived record in the management of its knowledge and results in vast wastage of assets and negative effect on quality of works. Therefore, the study aimed at examines the application of KM practice in two international construction companies. The case study was conducted on large size international construction companies operate in Nigeria at the construction project site of the Nigeria-Cameroon border. The result shows that the application of KM practices in the construction organizations in Nigeria is still at infancy stage because of lack proper understanding the concept and theory of KM practice in the construction organization. Therefore, the study suggests that the awareness KM practices in the construction organization should be encouraged in order to ameliorate infrastructure development problems.

Key words: Knowledge and knowledge management, construction organization and knowledge sharing, border, stage, KM

INTRODUCTION

The construction organization plays a predominant role in the national development, especially in the areas of construction development such as housing, road, warehouse, high rise building, bridges, tunnels, flyovers, airport construction, etc. (Nwachuku and Emoh, 2010). The significance of the construction organization as an agent of development is greater by its ability to provide profitable employment for the teeming populace of the nation. However, the strategic importance of the construction organization in a developing economy like Nigeria cannot be over emphasized as researchers have seen that the construction industry accounts for a momentous percentage of the nation's Gross Domestic Product (GDP) at 1.5% and employs a considerable fraction of the labour force approximately over eight million workforce (Patel, 2006). The construction organizations are proven to be the cornerstone and bedrock of rapid economic growth of any nation. Teicholz (2001) stated that the sector is likely to remain the major area of development activity as the need for the provision and replacement of infrastructure become more relevant.

In spite of the needs of infrastructural development, the performance of Nigeria construction industry in term of infrastructural development like road, high rise building, bridges, tunnels, factories and airports has been a source of concern in the country because they have been criticized in delivery sub-standard projects with high

expenses as a result of time and cost overrun, poor design and planning, variations, mistakes/errors during the construction. Therefore, to address this ugly situation, the knowledge and experiences of the past projects must be captured, store and share among the employees for re-use in the subsequent projects to avoid the same mistakes/errors and problems that have already solved to reoccur in subsequent projects. The management of knowledge generated during the construction phase of the projects is essential to improve the organizational performance in terms of delivery a project within the stipulated time and cost with good quality output. This denoted that during the construction phase of the project the of problems encountered, changes, mistakes/errors and their solutions should be documented and kept in the organizational databank for sharing among the employees for re-use in the future projects. This is because managing knowledge in the construction project reduced project time and cost, improved quality of work, reduce disputes and lastly improve value and client's satisfaction (Lin and Lee, 2012; Love *et al.*, 2005). The research aimed at examine the current status and scope of KM practice in the two construction companies in Nigeria. This provides a platform that clarifies needs for improvement in terms of KM practice in construction organization. The above aim is achieved with the following objectives:

- To determine the current status of KM practice in the construction organization

- To determine the level of awareness of the concept and theory of KM practice in the construction organization
- To suggest the way forwards

Literature review

The concept of knowledge: Shin *et al.* (2001) states that all schools of thought established that knowledge is different from information and data. Data was described as observation or facts by means of information at the same time as data within information which is expensive for a precise business. Vance (1997) explained that information is data interpreted into expressive frameworks while knowledge is information that has been real and is thought to be true. It is very important to understand the difference between information and knowledge because it helps in term of knowledge creation and sharing. Information is transformed into knowledge when it processed in the mind of persons and knowledge became information when it is pronounced informal language such as text, graphic, words or other symbolic forms (Alavi and Leidner, 2001; Weiss and Prusak, 2005). Milan (2006) looked at it from a traditional perspective and said that knowledge start of data which consists of certain facts and numbers. If data are organized within some context, it becomes information and when experiences and judgment are added to the mix, it finally becomes knowledge. The traditional view of knowledge may be seen as a categorized model with knowledge at the top, information in the central and data at the bottom (Mason, 2003) (Fig. 1).

Knowledge management: According to Wernerfelt (2005), KM is a technique that makes learning easier and achieve best method of creating, capture, store, share knowledge in a construction firm. The same notion was taken up by Teerajetgul *et al.* (2009) that KM is a method of acquiring a strategic asset that drive sustainable business benefits and also encourages a construction firm approach to identify, capture, evaluate and share a construction organizational intellectual resource. McInerney (2002) argues that KM is an attempt to develop useful knowledge within the organization by encouraging communication and providing opportunities for learning and encourage the sharing of knowledge objects. This considers people and learning issues in an organizational context as significant view. Lin and Lee (2012) have revealed that KM is the formalization on the right of entry in the direction of experience, knowledge and expertise with the purpose of creating new capacities to facilitate better-quality performance, promote innovation as well as improve customer worth (Frappaolo, 2000; Rowley, 2000). Therefore, KM in the construction organization is about creating, capturing, storing and sharing knowledge, best practices and experiences of engineers and experts that involved in the construction projects for re-used in the subsequent projects in order to avoid the repetition of the past mistakes/errors and also reduce the cost and time of construction re-works (Kasimu *et al.*, 2012). Figure 2 explained the concept of KM in the construction organization.

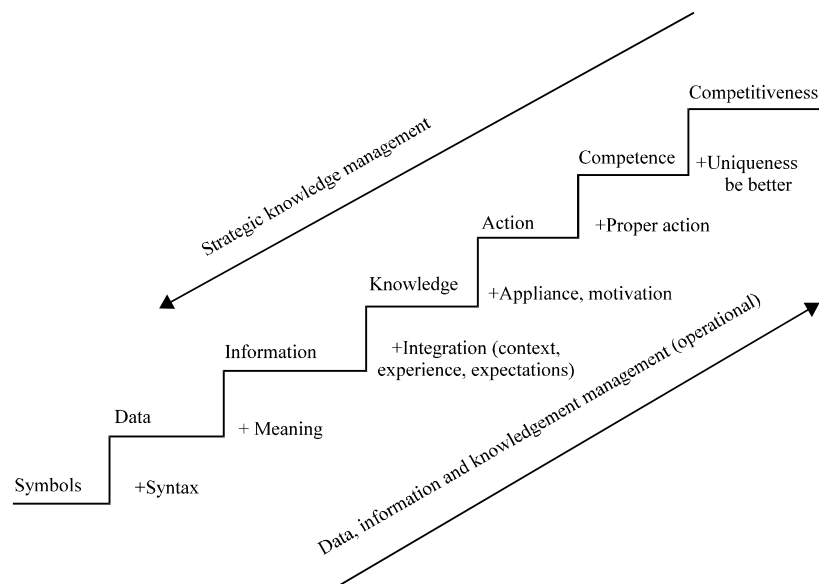


Fig. 1: The knowledge step adapted from Hussock (2009) and North (2005)

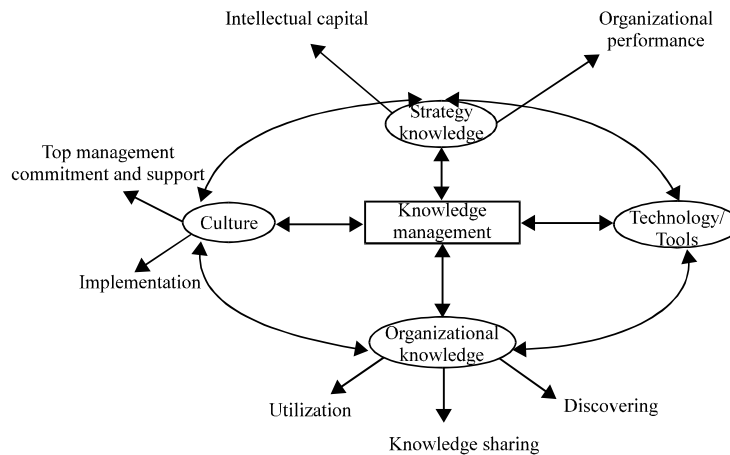


Fig. 2: Dimensions of KM (Jashapara, 2004)

Knowledge management in construction industry: The construction industry is a workplace that is dominated by heuristic construction companies and the employees of this organization perform their project management task based on the knowledge and past experiences rather than following a textbook approach or established logical approaches (Maqsood *et al.*, 2003, 2006). Therefore, the construction project team has to work together to accomplish a successful construction project. Working jointly involves sharing ideas, lesson learnt, best practice and experiences of the past project among each others in order to avoid the reinventing of the wheel (Kanapeckiene *et al.*, 2010; Tserng and Chang, 2004) However, every construction employee contributes its knowledge in a form of people, processes and technologies at varying degree of strength to the construction process. The management of knowledge and experiences of the experts and engineers in the construction project setting is very essential because the information, experiences and knowledge are dispersed over different processes, trades and people in different construction projects and also in different organisations (Fong and Chu, 2006; Haggie and Kingston, 2003). Fong (2005) emphasized that KM has a role in improving more collaborative behaviour among organisations and individuals involved in the construction processes. Similarly, Forcada *et al.* (2013) added that KM is one of the important means for organisations to recognize, transfer and internalize external knowledge. However, there are various organisations working in a construction project and the documents shared between these organisations vary from technical drawings, contract documents, project reports and schedule (Titus and Brochner, 2005; Bhatt, 2001).

The construction organization: The products of construction organizations have been considered as an essential project that contributes to the nation's economy both in terms of its benefits after completion and fundamental to meeting the nation's mobility needs to facilitate commerce, national defence and pleasure usage (Hillebrandt, 2000). This product of the construction organization is for public consumption not for the sake of the producer (Ofori, 1998). The construction organization involved subcontractors and suppliers that have the same functional role with their own objectives and pressure. Therefore, for the construction organization to accomplish its goals, the project manager has to manage overall costs, time and quality of action undertaken (Holmes *et al.*, 1999). Shen and Jiang (2006) outline the characteristics of construction projects such as big size, mostly Government is the client's, higher in construction cost, the distinctive nature of demand, the unpleasant nature of the work, large series of technologies and difficulty in the management of the project.

MATERIALS AND METHODS

The case study research approach was adopted, in order to fish out the understanding of the multifaceted issues or objects that can extend the experiences or added strength to what is already known through earlier research. Case study is one of the several strategies of undertaking research that has specific merit and demerit compares with other methods. Yin (1994) further expresses that case study is an empirical inquiring that investigates a contemporary phenomenon and context are not obvious and in which several sources of indication are utilized. Therefore, in the study a case study of two large size international construction companies operates in Nigeria

was conducted. The case study was carried on the construction site of the Nigeria-Cameroon border. The theme of conducting the case study was to establish the current status of KM practices in the construction organization in Nigeria. The focus groups are project manager, information manager, top management, professionals skilled workers. The verbal questions were asked on construction sites to ascertain what was perceived. The verbal questions cover the following areas. Mentoring and coaching of the employees, communications, time constraints, knowledge sources, workshops/seminars, recording and documenting the events that happen during the construction phase of the projects, sharing past experiences and lesson learnt from past projects.

RESULTS AND DISCUSSION

Case studies: To understand the reality of the current status and scope of the KM practice in the construction organization, it is necessary to know and understand what is happening in a particular organization to ascertain the level of commitment to KM practice. One way of gaining a deeper understanding is to know the culture of the people in an organization by visiting the construction project site, interaction with an organization and during the construction process. The first step adopted in this case study approach is a personal discussion with the top management in the two construction organization and also the professional skilled workers in the construction project site to get in depth of subject matter.

A case study was conducted at the highway construction project site of the Nigeria-Cameroon border. The Nigeria-Cameroon border construction site is an international highway and transport facilitation projects, join Bamenda in Northwestern Cameroon to Enugu Nigeria via a 433 km lengthy corridor. It is being founded by the African Development Bank, the World Bank and Japan's Agency for International Development to the tune of five hundred million dollars (\$500 Million). Although, this is a long standing project, first deliberated in the mid-80 sec. It acknowledged a significant boost in 2008, once the donors considered it a premeditated catalyst in diffusing persistent political unease between Cameroon and Nigeria after the peaceful resolution of the Bakassi border dispute. The contract was awarded to two multinational construction companies resident in Nigeria and Cameroon. The works begin in June 2010 with a completion date slated for 2014.

Company A is used instead of company's name due to business confidentiality. The company has over 3,200 employees across African and Germany country with

annual turnover of ₦250 million in Nigeria. It is one of the largest multinational construction company in African and one of the best construction company in term of highway construction projects, tunnels, dredging, flyovers and bridges. In other hand, company B as already said name withheld for business confidentiality is also one of the most popular company in Nigeria, Cameroon and Lebanon with 1,750 employees across the countries mentions with annual turnover of ₦215 million in Nigeria and Cameroon. The company is one of the recognized and respected construction company in term of project delivery in Cameroon and other part of the world.

Reconstruction and rehabilitation of the corridor road:

- A1: Periodical maintenance of Bamenda-Batibo in Cameroon and Bachuo Akagbe-Mamfe of 7.0 m wide and standard shoulders an overlay for Ikom-Ogoja Junction section in Nigeria
- A2: Widening to 7.3 m width with standard shoulders and with an overlay for the Mfun-Ikom section
- A3: Rehabilitation of Batibo-Numba and Mamfe-Ekok section in Cameroon and reconstruction of the section Ogoja Junction-Abakaliki in Nigeria
- A4: Construction of a two lane bridge with a length of 100 m on Munaya in Cameroon and a 2 lane 230 m long bridge on the Cross-River at the border between the two countries
- A5: Dualization of the Abakaliki-Enugu section in Nigeria

Current state of KM in the organisation: The aim of this case study is to determine the current status and scope of KM practice in the construction organization. The results obtained from face to face interactions with the project manager of these two companies and the professionals skilled workers explained below. It is observed that the practices of KM practices is not satisfactory because most of the knowledge and experiences generated during the construction phase of the project are not captured and documented in the organizational databank for reuse in future projects. These knowledge and experiences are variations, records of miscellaneous problems encountered during the construction, mistake during the construction and corrective measure taken to solve this problem were not recorded as new knowledge. This was as a result of lack of proper understanding of the concept and theory of KM practices in the construction organizations. Therefore, there is a need to create awareness of the KM practices in order to improve the organizational performances. Egbu *et al.* (1999) acknowledges that KM can bring about the much needed innovation and improved performance of the construction

organization in term of project delivery. In addition, some professionals skilled workers of the two construction companies admitted that the ideas of sharing knowledge and experiences during the construction phase of the project is not encouraging, due to the monopoly of knowledge from the experts. These experts are thinking that sharing knowledge and experiences of the past projects may affect their position and personality in their organization. From their ideology and beliefs, it is glaring that KM is not well understand in the two organizations. It was observed that in the two construction companies there is an element of mentoring, coaching and CPD in existence, although many complained of the time factors and inadequate facilities and strategies that to encourage the KM implementation. The professionals admitted that seminars/workshops were only organized by their professional bodies one or twice a year but not their construction organization. Parker and Craig (2008) stated that communication especially during the seminars and workshops needs to be constantly maintained as it plays a critical role in knowledge acquisition and sharing.

However, as at the time of conducting this case study on the construction site of Nigeria-Cameroon border, 15% of the construction projects were completed based on their reports and many issues and problems were waiting to be resolved, six different variation cases and claims were on the ground to be resolved, cost overrun on some section of works due to poor planning and programme were also standing to be resolved and lastly the slowdown of construction activities due to corrections and reconstruction of works that are already completed and also broken down of their equipment also contributed to the time and cost overruns. It was also observed that there is no mutual collaboration between the top management and the employees in the two construction companies. Whereas, without the proper collaboration and harmonious relationships among the employees of the construction organization, knowledge sharing strategy will not be accomplished, this is because communication plays a vital role in the KM implementation system. Maqsood *et al.* (2003) stated that construction employees have to work together to realize a successful construction project; working jointly involves sharing of ideals, information's and knowledge which underpins the success in carrying out complex construction projects.

CONCLUSION

There is lack of insights and understanding the concept and theory of KM practices in construction organization. It was observed that the practice of KM was

not satisfactory since knowledge generated during the construction phase of the projects were not captured, documented, store and share for re-use in the subsequent projects. Although, it was perceived from the construction site that the project managers are not adequately involved in KM practices. This is because the project managers and expert's in construction organizations believed that holding knowledge will serve as a power for them to maintain their position and respect with their colleague in the organization. Furthermore, KM practice such as Continuing Professional Development (CPD); workshop; seminar and site meeting activities need to be improved to achieve better project performance in terms of project delivery.

The sharing knowledge and experiences of the past projects are relevant resource that drives the future success of the construction project and also prevent the reinventing of the wheel. Therefore, the study suggests the need to encourage KM awareness and the benefit derived in KM implementation in the construction organization to all the employees and stakeholders that participated in construction projects. The office of knowledge manager should be created under the office of project manager for capturing, documenting, storing sharing of knowledge generated during the construction phase of the projects with adequate databank for knowledge storage. The harmonious relationship should be encouraged among the employees of the construction organization in order to facilitate knowledge and experiences sharing. Von Krogh (2002) and Ainin *et al.* (2012) stated that project performance can be improved when employees communicate by sharing and utilizing best practices, lesson learnt, experience and knowledge. This is because sharing experiences and knowledge among the colleagues in the construction organization for re-use in the future brings benefits, like minimizing the need to consult past projects, improving the quality of the solutions and reducing the time and cost of solving problems, since there is no need to continuously look for answers to the same questions (Tserng and Lin, 2004).

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