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The Influence of Technological Devices on Knowledge Sharing Practices in the Construction Organisations in Nigeria

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ABSTRACT

Sharing of knowledge in the construction organisations is become necessary, as it certainly leads to knowledge application, innovation, as well as a competitive advantage for the construction organisations. Thus, technological devices are used for information and knowledge dissemination in the business organisation. Therefore, this paper examines the significant influence of technological device on knowledge sharing practice in the construction organisation. The questionnaire survey approach was adopted, due to the type of data required. A total of 350 questionnaires were distributed to Engineers, Quantity Surveyors, Architect, Foremen and other stakeholders. Analysis of variance (ANOVA) and descriptive analysis were adopted for data analysis. The results show that the followings technological devices have influence on knowledge sharing practice: email, internet, 4D simulation, video conference, online chatting, mobile phone, facebook, desk and laptop, fax machine, electronic billboard and cellular phone. In view of the above, the paper suggests that the management of the construction companies should encourage the use of technological device on knowledge sharing practice in order to have effective dissemination and storage of knowledge.

Keywords: knowledge management, knowledge sharing, technological devices and construction organisation.

1 INTRODUCTION

The characteristics of the construction organisations in terms of hierarchical and fragmentation in nature have made the employees of the organisation not consider themselves as part of the company [9]. Since the employees are discarded once the projects are completed and left with their domain knowledge. Therefore, for the professionals to document their tacit knowledge in the database for future use, there is need for a good working relationship between the clients, project managers, employees and stakeholders to accomplish the efficient knowledge sharing through technological devices to achieve the cost, time and quality construction output. [17] asserted that construction process required

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sharing knowledge, information and data between the employees on a daily basis to accomplish its target. Although, [24] have identified two crucial roles the technological devices plays in construction organisation such as exchange of design information and exchange of management information. For example the design consultant like Architect, Engineers, and Quantity Surveyors gives professionals advisers to the clients, since they are responsible for the knowledge sharing and professionals experiences on design and management of information among the various project participants. [18] added that the means of sharing knowledge is through the traditional means of communication such as face to face interaction. This is main reason why the construction organisation has been suffered for many years to access, updates, captured and stored the knowledge and professionals experiences.

The development in the information communication technology (ICT) has lead increases the use of technology devices to facilitate knowledge sharing practices in construction organisations. Thus, the management of construction like other industries requires efficient sharing of knowledge, experiences, and best practices among the personnel to accomplish their task [28]. Then, it has become necessary for the construction organisation to encourage the use of the technological devices since it enhance the effectiveness of decision making and supported the much needed integration in the construction organisation [14,18]. Therefore, the aim of the paper is to evaluate the significant influence of technological devices on knowledge sharing practice in the construction organisations. This will provide a platform that clarifies the needs for improvements in term of influences of technological devices on knowledge sharing practice in construction organisations. The above aim is achieved through the accomplishment of the following objectives: determine the level at which technological devices are utilized on knowledge sharing practice in the construction organisations and to established the significant influence of technological device on knowledge sharing practice in the construction organisations.

2 LITERATURE REVIEWS

In this paper the followings areas of the literatures were examined to establish the theoretical underpinning the research: knowledge management, knowledge sharing practice, technological device and the construction organisation. These are explained in Section 2.1 to 2.4 respectively.

2.1 Knowledge management

According to [5] KM is a procedure for collection, distribution and efficient utilisation of the knowledge resource. [7] added that KM is the creation, acquisition, capturing, discussing and use of knowledge to improve the organisation performance. [22] argued that KM is an approach employed by organisations to ensure that knowledge reach the right people at the appropriate time, and that those people share and use the knowledge to improve the organisational performance. [2] stated that KM

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is a procedure for knowledge creation, validation, presentation, distribution and application. [26] asserted that KM is a method, infrastructures, and technical and managing tools, made to create, share and leverage information and knowledge within and around organisations. Although, the above ideas of researchers vary within their description of KM, there appears to become a consensus to deal with KM as a process permitting use of knowledge as a key factor to generate and add value 15,16,12]. From the different definitions and ideas of the researchers highlighted above, KM can be described in this research as a process of creating, capturing storing, sharing, re-using and updating the knowledge and professionals experiences in order to improve the organisational performance. Figure 1 summarised the definition of KM.

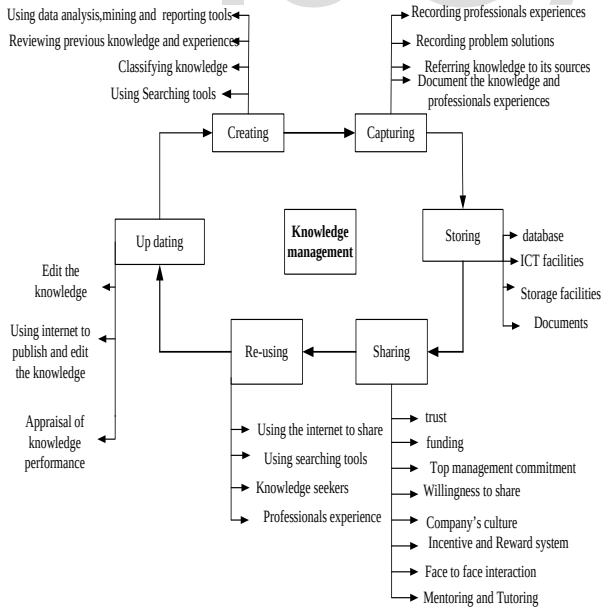

Figure 1: The knowledge management

2.2 Knowledge sharing practices

Today construction organisations are facing difficulties in terms of international competitiveness. These difficulties rely on the recognition of vital knowledge that enhances the construction organisation process. Knowledge sharing is seen as a main driver for an organisation to be competitive. In spite of the large quantity of literature on knowledge sharing practice from various researchers, knowledge sharing devices are still essential to be understood especially in developing country like Nigeria [1,12]. [6] emphasized that knowledge sharing devices are very multifaceted processes to promote an organisation. Certainly, knowledge sharing hostility is apparent as a phenomenon that widely dominates organisational reality. [19] asserted that KM initiatives are the devices that align knowledge sharing with the organisational culture. [3] asserted that KM ideas are organisational approaches to managing an organisational knowledge. [29] further expressed that KM initiative is organisational approach that dictates how companies generate value from their intangible assets. [30] highlighted ten types of KM initiatives that are implemented in the UK, and from their investigation it was discovered that none of the organisation had fully implemented all the initiatives. These ten KM initiatives are capturing knowledge electronically in a repository; using information technology to share and transfer knowledge; using the intranet to publish and access information; building and maintaining employees' expertise and skills; identifying internal or external best practices; creating a supportive environment for knowledge sharing; developing strategies for KM; appointing KM

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leaders and teams; rewarding employees who contribute and share knowledge and measuring the value of intellectual capital. In addition, [25] added that for successful implementation of KM, an organization have to consider the following factors: These are the needs to develop a strategy that clearly defines the objectives of KM implementation; resources, including a budget and management support, are essential for KM implementation success; recognition that necessary reform such as organisational culture needs to be addressed to facilitate KM implementation; KM strategy needs to be supported by both IT and non-IT tools to be successful; it is important to link KM to existing performance measures; there is a need for a KM maturity scale to enable organisations to objectively benchmark their KM implementation efforts. [4] pointed that there are seven critical aspects when developing a KM system in an organisation, such as: describe what is required for the KM programme; draw up a strategy; understand the organisations current status of knowledge; enable a knowledge sharing culture; manage the knowledge content; use enabling technology and measure and review the results. Based on the explanation and the views of the above researchers, this research demonstrate knowledge sharing practice during the construction phase of the project as shown in Figure 2.

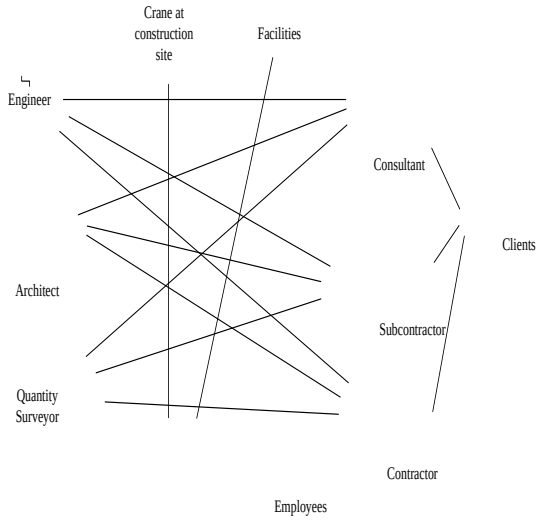

Figure 2: Knowledge sharing practice during the course of the construction project

2.3 The Technological devices

Technological devices are used frequently in the construction organisations to overcome the challenges and achieve better improvement during the construction phase of the projects. The technological devices were also use to improve the communication systems between the construction project team members especially in the areas of knowledge sharing. This signifies that the use of technological devices during the construction phase of the projects save time and improve the quality output. However, in the construction organisations the followings technological devices were used to share knowledge, ideas, best practices, and professionals experience to improve the organisational performance. These are: internet, intranet, web camera (webcam),

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electronic mail, 4D simulation, video conference, Facebook, twitter, database, software (WinQS, Catopro, Master bill, QS Elite, Snap vector, In house software) etc. These technological devices were used for the following purposes: fast, user friendly, informative resources, social networking, e-business, online services. Figure 3 shows the technological devices that are commonly used for information dissemination in the construction organisation.

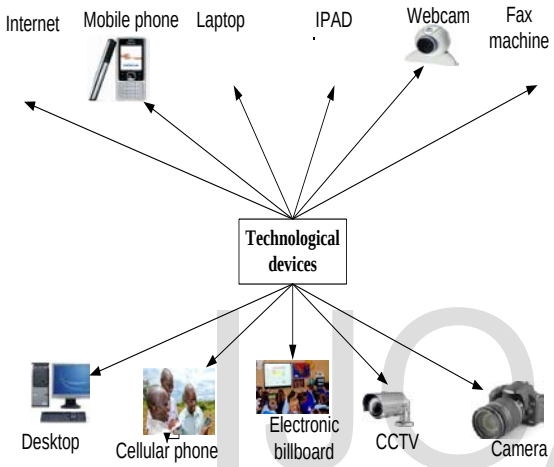

Figure 3: Technological devices that are commonly used for knowledge sharing practice

2.4 The construction organisations

The products of construction organisations 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 defense, and pleasure usage [10]. This product of the construction organisation is for public consumption not for the sake of the producer, [23]. The construction organisation involved subcontractors and suppliers that have the same functional role with their own objectives and pressure. Therefore, for the construction organisation to accomplish its goals, the project manager has to manage overall costs, time and quality of action undertaken (Holmes *et al*, 1999). Shen *et al* (2006) outlined 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.

3 RESEARCH METHOD

The method adopted for this research is a survey questionnaire approach; the survey questionnaire was used to study the sample of individuals from a population with a view towards making statistical inference about the population using the sample (Groves *et al.*, 2009). It also used to pull out about public opinion, such as beliefs, perception, ideas, views and thought about some things. Therefore, the questionnaire survey is mostly used for scientific purposes. Since it provides important information for all kinds of research fields, for example, the current situation on the ground, psychological perception and views of the population. In order to obtain the required data for this study, a survey questionnaire was adopted as results of fragmentation and diversification of the construction organisations in Nigeria.

Construction organisations are fragmented and diversified in nature with different types of professionals involved in the

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construction projects and sometimes at different location. Therefore the stratified random sampling technique was adopted for the selection of the construction organisations that participated in this study. The choice of the companies that participated was based on annual turnover, efficiency, capacity of companies and their past records. 35 construction companies were selected for the questionnaire survey. A total of 350 questionnaires were distributed to Engineers, Architecture, Quantity Surveying, Builders, Project manager, Information manager and others experts across the selected construction companies in Nigeria. However 72.29% of the questionnaires distributed were filled correctly and returned; 12% were filled wrongly and returned, whereas 15.71% were not returned. Then, 72.29% of the questionnaire returned represented the 253 questionnaires that were used for the analysis.

In addition, the questions in the questionnaire were designed in such a way that the impact of technological device on knowledge sharing practice will be properly addressed. The relevant issues concerning the influence of technological device on knowledge sharing practices were highlighted in the questionnaire especially the followings: email, internet, 4D simulation, video conference, online chatting, mobile phone, facebook, desk and laptop, fax machine, electronic billboard, cellular phone, intranet, webcam, CCTV and smart card. The questionnaire that was used to record the responses of each respondents contained mainly closed ended questions using a five- point Likert scale ranged from none (1) to very high (5).

3.1 Method of analysis

The starting point in data analysis was to convert the raw data recorded in the questionnaires into numbers and arranged them into SPSS version 20.0 database for the analysis. The descriptive analysis and ANOVA were used to analyse the data obtained from the construction companies. In descriptive analysis the mean statistic was used to simplify the arithmetic average of the values in the set, acquired by summing the values and dividing by the number of values. The standard deviation was used for summaries the measure of the differences of each observation from the mean value. In ANOVA this hypothesis was formulated: There is no significant influence of technological device on knowledge sharing practice in the construction industry. The statistic parameters used for the ANOVA are P value of 5% and F value.

4. PRESENTATION OF THE RESULTS

The results obtained from the analysis are summarized in tabular form for clear understanding. The results were presented both in figure and tabular form.

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Table 1**:** The influence of the technological devices on knowledge sharing practice

Items measured	**F**	**P value**	**Remarks**
Email	18.045	0.002	Influence
Internet	22.145	0.001	Influence
4D simulation	14.672	0.003	Influence
Intranet	3.520	0.007	Not influence
Webcam	3.275	0.009	Not influence
Video conference	9.054	0.003	Influence
On line chatting	17.120	0.002	Influence
Mobile phone	21.190	0.000	Influence
Facebook	15.031	0.001	Influence
Desk and Laptop device	20.167	0.000	Influence
Fax machine	8.480	0.005	Influence
Electronic billboard	19.381	0.002	Influence
CCTV	4.098	0.006	Not influence
Smart card	2.035	0.021	Not influence
Cellular phone	16.013	0.001	Influence

The results in Table 2.0 show that the followings technological devices have significant influence on knowledge sharing practice in the construction organisations. These technology devices are: email, internet, 4D simulation, video conference, online chatting, mobile phone, facebook, desk and laptop, fax machine, electronic billboard and cellular phone. This indicates that their P value ≤ 0.005.

On the other hand, the followings technological devices: intranet, webcam, CCTV and smartcard have the P value > 0.005. This shows that intranet, webcam, CCTV and smart card do not have significant influence on knowledge sharing practice in the construction organisations. This reflects that the practice of knowledge sharing in the construction organisations does not depend on internet, webcam, CCTV and smart card.

Similarly, the result obtained from the descriptive analysis in Figure 5.0 displays the level at which technological devices is utilized in the construction companies. From the figure it is glaring that desk and laptop, mobile phone, email, video conference, facebook, internet, cellular phone, online charting and fax machine are the main technological devices that are mostly used in the knowledge sharing practice in the construction companies.

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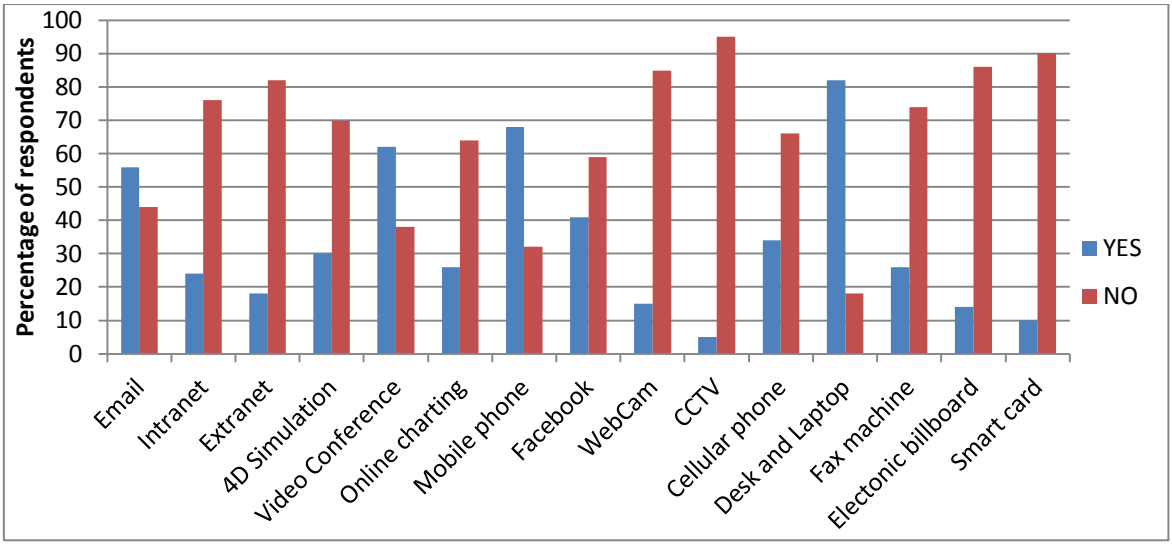

Figure 5.0: The level of technological devices utilization in the construction organizations

5 CONCLUSION

Knowledge sharing practice in the construction organisations enhances the quality of the organisational output. But the most effective means of knowledge sharing practice is through the use of technological device. Therefore, the influence of technological devices were examine and the results obtained from both the descriptive and ANOVA as shown that the followings technological device have significant influence on knowledge sharing in the construction industry: email, internet, 4D simulation, video conference, online chatting, mobile phone, Facebook, desk and laptop, fax machine, electronic bill board and cellular phone.

In view of the above, this paper suggest that the management of the construction organisation should encourage the use of technological device in knowledge sharing practice in the construction organisation in order to have an effective dissemination and storage of knowledge. The technological devices that are used for the professional experiences and knowledge sharing should be made available in the construction organisation as it facilitates the knowledge sharing practice. The management of the construction organisation should also develop proactive management strategy that would facilitate the knowledge sharing practice through the use of technological devices.

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