

Assessment of the Utilization of Microsoft Project Management Software by Construction Companies in Kano State, Nigeria

By

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ABSTRACT

This study was conducted to assess the utilization of Microsoft project management software by construction companies in the state. Three research questions guided the study and a descriptive survey research design was employed for the study. A Total of 34 construction companies were selected for the study using purposive sampling technique. The instrument used for data collection was 22 items questionnaire which was titled "questionnaire for project managers". It was validated by three experts, one from the department of Science and Technology Education, Bayero University, Kano, and the other two from the department of Industrial and Technology Education, Federal University of Technology Minna. The reliability coefficient of the instrument was 0.87 using cronbach Alpha statistics. A Total of 34 questionnaires were distributed among construction managers. In analyzing the data, mean and standard deviation were used. Findings of the study revealed that, construction companies were not utilizing the software for project management. The benefits of using the software includes the ability of the software to help users in monitoring the progress of work, forecasting feature resources, managing budget and staying focused and organized. Expensive nature of the software, difficulty to open in other system that does not have the software and lack of customization features were some of its obstacle. Based on the findings, it was recommended that construction companies should train their construction managers on how to utilize the software for the management of resources in order to complete the projects on time, within budget and with high quality

Keywords: Assessment. Microsoft. Management. Software. Construction Companies

Introduction

Project management in construction is the process of planning, organizing and directing

each part of the project life cycle from initial stage to the completion. It is the application

of knowledge, skills, tools and techniques to project activities to meet project requirements through the integration and application of project management processes which includes initiation, planning, implementation, controlling, monitoring and termination of a project (PMI, 2004). According to Hexagon (2023), project management is a holistic practice with the goal of delivering projects on time and within budget but is also complex discipline that requires addressing many important concerns, including cost control, scheduling, Procurement, and risk assessment that requires project managers to make proper planning and scheduling of resources to each and every construction activity. To make the scheduling of resources easy and more efficient, a construction manager can opt for making use of any of the project management software for the scheduling of construction resources.

Project management software are packages commonly used for resource scheduling. According to Robert et al (2013), Project management software generally facilitates the integration of project data, the interaction with enterprise systems and the interoperability with new information Technology (IT). Besides optimizing the productivity of the teams, the system allows

to make better decisions, maintain a competitive advantage and to implement an effective project management. Joydeep et al (2015) stated that, the modern project management practice is complicated to an extent that it cannot operate without the assistance of project management software such as Micro Soft Project (MS Project).

The MS Project software was developed and sold by Microsoft to support project managers in growing a plan, assigning assets to responsibilities, tracking development, handling the finances, and studying workloads (Subramani and Karthick, 2018). Gantt Chart and Critical Path Method (CPM) are the most common features of MS project software. The Gantt chart which is a planning tool and one of the most important features of MS project is used to get an overview of the entire project on visual timeline which shows the work that is schedule to be done on specific days. It helps the project managers and team members view the start dates, end dates and milestones of a project schedule in simple stacked bar chart. Novakova and Novy (2021) stated that detailed and realistic planning is required for project management and monitoring and the Gantt Chart enables to monitor the continuity of individual project parts as well as the degree of

fulfillment of the given tasks and the overall time required.

According to Matthew, Bruce, & Colleen (2001), the utilization of project management (PM) software such as MS project as a tool for managing and organizing work has grown and continues to grow at a rapid pace in all industries. The software can be used to perform many task such as identifying critical activities using critical path method (CPM). Svozilova (2016) stated that one of the most important network diagram which is used to plan the individual project activity sequences is compiled by the Critical Path Method (CPM) which serves as a project management tool developed based on the search of project critical path - the longest sequence of project tasks that do not contain any time reserves.

The software can also be utilized in the management of project through Scheduling of resources. The scheduling of resources is one of the vital functions in construction project to determine the sequence of activities necessary to complete a project. Scheduling of resources with MS project software requires the efficient and appropriate allocation of all the resources to various construction activities involved in the project to be executed. The execution of the

scheduled task work based on the resource availability as defined in the resource calendars. Novakova and Novy (2021) stated that the scheduling of the project forms an integral part of the project plan and contains all the information on the dates and time sequences in which the project work takes place and to be completed by the construction companies

Construction companies are responsible for executing construction project through proper planning and coordination of construction activities, in order to complete the project within the stipulated time, budget and quality. To achieve this, the contractors must determine the best methods to finish the project as specified in the project documents. One of the best method is to make use of the project management software such as MS project to helps them in fulfilling the various requirements of the project. Hoang, Nhat and Swostik (2014) hinted that the main function of software is to offer help, and enhance the quality of output with less effort than manual ways. A project has disparate requirements and the aim of the adopted software is to fulfill those requirements effectively in terms of time and cost. In addition, the issues of scheduling, tracking and physical element

must be considered while adopting the project management software.

Various literatures have emphasized the important of using project management software for the management of construction activities. Nikhil, Dwivedi and Trivedi (2020) conducted a case study on the effective scheduling using MS project in the construction of two floor residential building in Gwalior. All the construction activities were copied in MS Project software and the scheduling was done. It was found out that many days were saved due to the used of the software as when compared to traditional method. However, Rhuta et. al. (2015) carried out a research study by using MS project 2013 aims at minimizing the duration of the project. After allocating the resources, he concluded that the use of project management software helps in reducing lost of resources.

Despite the numerous benefits of MS Project software, yet, many construction companies do not perceive the benefits of using the software for the purpose of managing their resources. This may be associated to the lack of competent employees, in addition to non readiness of construction companies in changing toward using modern devices (pavel, Anna and Yuriy, 2016). This is what

prompted the researcher to embark on this study to assess the utilization of MS project software by the construction companies in Kano state Nigeria.

Statement of the Problem

Contract in construction is an agreement between the contractor executing the construction work and the client who is hired to do the work, spelling out clearly the scope, terms and conditions of the project, which include the type of work to be done, the starting and finishing time, the total cost, as well as the quality of the construction project. several construction companies were experiencing delay problem in construction which lead to construction disputes that may terminate the contract or even claims threatening the contractor's surety bonds if unmitigated, thereby violating most of the contract agreement. Yang, Chen and Huang (2012) stated that construction delays and duration issues are frequently responsible of transforming productive ventures into losing projects. These delays can be reduced or prevented by an increased pre- project planning and successful project management as they are one of the most critical success factors of the construction project accomplishment. The utilization of project management software such as MS project will help the project managers in planning

and scheduling their resources thereby effectively managing the construction project within budget, time and quality. Meredith and Mantel (2001) stated that Project Management software helps Project driven organizations deliver high quality products and services within a short time with fewer costs. Based on the foregoing, therefore, the study was designed to assess the utilization of MS Project management software by construction companies in Kano state, Nigeria.

Objectives of the Study

The aim of the study is to identify the level of utilization of MS Project management Software by construction companies in Kano state, Nigeria. Specifically, the study seeks to determine

1. The usage of MS project management software by the construction companies in Kano state, Nigeria.
2. The perceive benefits of using MS project management software by construction companies in Kano state, Nigeria.
3. The challenges of using MS Project management software by construction companies in Kano state, Nigeria.

Research Questions

1. What is the MS project management software being used for by the

construction companies in Kano state, Nigeria?

2. What are the perceive benefits of using MS Project management software by construction companies in Kano state, Nigeria?

3. What are the challenges of using MS Project management software by construction companies in Kano state, Nigeria?

Methodology

The research design adopted for this study was descriptive survey research design. This is because survey is a data collection instruments for quantitative research which involved the use of a questionnaire to assess the utilization of MS project software by the construction companies in Kano State, Nigeria. According to Julie (2015), survey research can use quantitative research strategies using questionnaires with numerically rated items. This design was considered suitable because the data was collected from the respondents that were working with the identified construction companies in the capacity of construction managers. Purposive sampling technique was employed to select one project manager from each construction company who is directly responsible or play better role in

managing construction activities in that company. This makes a total of 34 respondents from the 34 construction companies that have their offices in the state and also currently undertaking various construction projects in the state. Wasihun and Fikire (2022) stated that a researcher can use purposive sampling technique, without sampling research participants on a random basis; this is because the goal of this sampling is to sample research participants strategically, so that the selected participants are relevant to the research questions that are being asked. The instrument used for data collection was 22 items questionnaire titled "Questionnaire for the utilization of MS Project Management Software (QUMSPMS)". The questionnaire comprises of two sections, section "A" contains the personal data of respondents and section "B" elicits responses on the research questions. The instrument was validated by three experts, one from the department of Science and Technology Education, Bayero University Kano, and the other two from the department of

Industrial and Technology Education, Federal University of Technology Minna, Niger State, Nigeria. Four rating scale was used to rate the responses. Strongly Agree (SA= 4 points), Agree (A= 3 points), Disagree (D= 2 points) and Strongly Disagree (SD= 1 point). Mean and standard deviation were the statistical tools used to answer the research questions and the baseline scores of 2.5 and above were considered agreed and below 2.5 disagreed. According to David (2005), a mean score of 2.5 was used as a criterion to judge mean scores for a modified four-point item format. The mean of 2.5 is calculated from the sum of $4+3+2+1$ divided by 4. The reliability coefficient of the instrument was 0.87 using cronbach Alpha statistics. According to Keith (2018), a reliability coefficient of around 0.70 or greater is widely considered desirable.

Results and Discussions

Research Question 1: What the MS project management software is being used for by the construction companies in Kano state, Nigeria?

Table 1: Mean Responses of the respondents on the usage of MS project management software by the construction companies in Kano state, Nigeria

| S/NO | Items | Mean | Standard Deviation | Remarks |
|------|------------------------------------------------------------------------------------------------|------|--------------------|-----------|
| 1. | Microsoft Project software is used for general projects management in our company | 1.85 | 0.82 | Disagreed |
| 2. | The software is used for Project planning | 2.09 | 0.75 | Disagreed |
| 3. | The software is used for tracking project evolution when it comes to completion, time and cost | 2.18 | 0.71 | Disagreed |
| 4. | The software is used for scheduling and time management | 2.24 | 0.74 | Disagreed |
| 5. | The software is used for resource allocation | 2.46 | 0.78 | Disagreed |
| 6. | The software is used for project budget | 2.41 | 0.79 | Disagreed |
| 7. | The software is used for communication and collaboration | 2.18 | 0.90 | Disagreed |
| 8. | The software is used for documentations | 2.06 | 0.77 | Disagreed |

The analysis of data presented in Table 1 above revealed that the respondents disagreed with all the eight items on the level of utilizations of MS project management software in their construction companies with their means ranges from 1.85 – 2.46 and standard deviations from 0.71 – 0.90. This signifies that they were not utilizing the software for general project management,

project planning, tracking project evolution, scheduling and time management, resource allocation, communication and collaboration, project budget as well as documentations.

Research Question 2: What are the perceive benefits of using MS Project management software by construction companies in Kano state, Nigeria?

Table 2: Mean Responses of the respondents on the perceive benefits of using MS project management software by construction companies.

| S/NO | Items | Mean | Standard Deviation | Remarks |
|------|--------------------------------------------------------|------|--------------------|-----------|
| 1. | The software help the users stay focused and organized | 3.03 | 0.97 | Agreed |
| 2. | The software is user friendly | 2.32 | 0.68 | Disagreed |
| 3. | The software gives opportunity to manage budget | 2.71 | 0.87 | Agreed |
| 4. | The software helps in forecasting feature resources | 3.38 | 0.69 | Agreed |
| 5. | The software is very flexible | 2.44 | 0.86 | Disagreed |
| 6. | The software enhances customers satisfaction | 2.91 | 0.66 | Agreed |
| 7. | The software helps in monitoring the progress of work | 3.59 | 0.55 | Agreed |

From Table 2 above, the result revealed that 5 out of 7 items were agreed as some of the benefits derived from using MS project software with their means ranges from 2.71 – 3.59 and standard deviations from 0.55 – 0.97. The benefits derived includes assisting the user to stay focused and organized during the management of construction project, gives opportunity to manage budget, helps in forecasting feature resources, enhances customer satisfaction as well as helps in monitoring the progress of work. On the

other side, 2 items were rejected as some of the benefits derived from the software with their means of 2.32 and 2.44 and standard deviation of 0.68 and 0.86. The 2 items rejected were the user friendliness and flexibility of the software.

Research Question 3: What are the challenges of using MS Project management software by construction companies in Kano state, Nigeria?

Table 3: Mean Responses of the respondents on the challenges of using MS project management software by construction companies in Kano state, Nigeria.

| S/NO | Items | Mean | Standard Deviation | Remarks |
|------|------------------------------------------------------------------------------------|------|--------------------|---------|
| 1. | The software is difficult to learn and use | 2.56 | 0.93 | Agreed |
| 2. | The software is expensive | 3.41 | 0.78 | Agreed |
| 3. | The software has limited integration with non Microsoft products | 3.18 | 0.71 | Agreed |
| 4. | The software has difficulty to open in other system that doesn't have the software | 3.47 | 0.79 | Agreed |
| 5. | The software has difficulty in visualizing/tracking progress | 2.88 | 0.84 | Agreed |
| 6. | The software lack customization features | 2.82 | 0.97 | Agreed |
| 7. | The software files are not easy shareable | 2.69 | 0.98 | Agreed |

The result in Table 3 above revealed that all the items listed were agreed by the respondents as the challenges confronting the utilization of MS project management software by construction companies in Kano state, Nigeria with mean scores ranges from 2.56 – 3.47 and standard deviations from 0.71 – 0.98.

Discussion of the Findings

The findings of the study in Table 1 above revealed that all the 8 items were not agreed with as some of the area of usage of MS Project management software by construction companies in Kano State with their means ranges from 1.85 – 2.46 and standard deviations from 0.71 – 0.90 . This signifies that they were not fully utilizing the software despite its importance in the management of projects as identified by Agim (2015); Peansupap and Walker (2005) who stated that the area of usage of the software as designed to assist project managers in developing plans, assigning resources to tasks, tracking progress, project budget and analyzing workloads as well as helps in reducing the time for data processing and communicating information for effective decision-making and coordination among construction participants to enhance construction productivity. Nevertheless, the finding may be due to the fact that that most

of the construction companies were using the manual method for managing their construction activities and could therefore not identify the usage of the software.

Table 2 findings revealed that 5 out of 7 items were agreed as some of the perceive benefits derived from using MS project software with their means ranges from 2.71 – 3.59 and standard deviations from 0.55 – 0.97. The benefits derived from the software include assisting the user to stay focused and organized during the management of construction project, helps in forecasting feature resources, enhances customer satisfaction, helps in preparing budget as well as monitoring the progress of work. On the other side, 2 items were rejected as some of the benefits derived from the software with their means of 2.32 and 2.44 and standard deviation of 0.68, and 0.86. The 2 items rejected were the user friendliness and flexibility of the software. For the items that were agreed with, the findings was supported by Hoang, Nhat and Swostik (2014) who hinted out that the main function of a project software is to offer help, and enhance the quality of output with less effort than manual ways. A project has disparate requirements and the aim of the adopted software is to fulfill those requirements effectively in terms of time and cost in addition, the issues of

scheduling, tracking and physical element. For the items that were disagreed with, the findings is in line with Celoxis (2018) who stated that scheduling with MS project software is powerful but painfully complicated. There are too many concepts

companies in Kano state were not utilizing fully the potentialities of the software despite their knowledge of some of its benefits. However, the numerous challenges identified were hindering the proper utilization of the software.

Recommendations

construction companies in Kano state, Nigeria, with mean scores ranges from 2.56 – 3.47 and standard deviations from 0.71 – 0.98. The finding is in line with Umar (2013) who stated that factors hindering some firms from using project management software package were due to the lack of knowledge of the software package, the high cost of the software and lack of the technical know-how of project management software usage which is a problem in the construction industry in Nigeria.

Conclusion

The study investigated the level of utilizations of MS project management software by construction companies in Kano state, Nigeria. Based on the findings of this study, it is concluded that construction

2. Exploring the benefits of the software in the project management, there is need for management of construction companies to emphasize on the use of the software as against the manual method in the management of construction projects.
3. Microsoft project management Software Company should make the software more users friendly so that many companies can patronize and computerize their mode of construction management.

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