

**AN APPRAISAL OF THE AWARENESS AND USE OF PLANNING
SOFTWARE IN QUANTITY SURVEYING FIRMS IN KADUNA –
NIGERIA**



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ABSTRACT

Construction industry is project oriented where each project is unique and could be properly achieved through adequate planning. The tasks of planning have been carried out using Information Technology (IT). It has been established that construction industry is often described as a slow adopter of new technology. This study therefore explores the level of awareness and applications of planning software with their challenges among Quantity Surveying professionals practising in Kaduna state. Data was collected from thirty two (32) registered Quantity Surveyors practising in the state who are members of the Nigerian Institute of Quantity Surveyors (NIQS). This study adopted a random sampling technique to retrieve relevant data from the firms without any form of bias using a structured questionnaire. Data retrieved was analysed using descriptive statistics and means and relative importance index (RII) were computed. Results show that there is a significant level of awareness by the respondents of planning software in Quantity Surveying practice. Unfortunately, there is poor provision of the common computer software in the firms within the state based on the types of packages used as relative important index reads 0.55 as maximum. There is a good level of software usage based on the factors or indicators that can define the usage with highest mean of 2.50. The study recommends the provision of an avenue for training professionals and organisations should provide adequate software so as to tap from the numerous benefits of IT. Professional bodies should also encourage their members on the usage of the software through workshops, seminars and conferences.

Key words: *Information Technology, Planning, Software, Quantity surveying firms, Awareness.*

1.0 INTRODUCTION

Planning is a critical aspect of any project with regards to project performance and success. The planning process is an incessant one during the course of the delivery of a project. (Idoro, 2012). Several researches on factors affecting project management success put forward planning a key determinant of project success (Murphy, Baker, and Fisher, 1974; Slevinand Pinto, 1987; Aronson, and Lechler, 2009). Project managers are mandated to formulate an encompassing project plan and implement the plan

throughout for success (Dvir, Razb, and Shenhar, 2002).

Information Technology (IT) through the use of computers and software have steered into the old-fashioned work environment resulting to a shift in the approach we use in executing our works. This alteration from the old-style method of doing work is known as the manual manner of work order. This has been termed as strenuous, time consuming and error-prone. Hore (2006) opined that, the application of Information Technology in the construction sector has been intermittent and disorganised. It has also been established that

the construction industry is often described as a slow adopter of new IT and systems (Oyediran and Odusami, 2005; Dawood and Sikka, 2007).

However, with advancement in IT, Nigerian construction industry ought to adopt the latest trend in the development as a virtual database with more emphasis on Building information modelling (Nurshuhada, Faizul, Nur, Syahrul, and Sapturinah, 2018), as it can help to improve the construction process in so many ways. It can also improve accurate, adequate and automated quantification of building works with reduction in cost estimates variability (Manish, Abhishek, and Kshitij, 2016).

With the level of importance of planning and level of problem faced regarding the application of IT systems in the construction industry, comes the opportunity for a rethink of the way projects are planned. This is to ensure a successful and timely execution of projects through integrating IT as a means of solving communication and information management challenges (Hikyaa, 2008).

Efficiency, productivity and competitiveness in today's vigorous and ever changing industry is favoured by computer integrated approach toward construction activities. It is postulated that the usage of software has been limited and mainly focused on increasing productivity (Koekomoer and Smallwood, 2007) and reducing cost while there are several other benefits such as speed, accuracy and consistency (Ting and Nurulhuda, 2016). Construction projects being specific, unique and complex with varied time and budget constraints contribute to the challenges of software application during the design and production phase.

Matipa, Cunningham, and Naik (2010) identified that it is vital to ensure that the client's budget will cover the construction cost. This is because the cost is intermediately the key factor through the

project lifespan. Quantity Surveyors provide cost regulation in the course of decision-making all through the supervision of a project from inception to completion stage of the project. The part Quantity Surveyors (QS) play in the construction industry cannot be overemphasised. This is because they manage the cost all the way through the project lifecycle right from the feasibility and design phases up to erection of the structure. The undertaking of the QS can be categorised into two segments; pre-construction and post-construction stages in a project. During the pre-construction stage, the QS prepares preliminary estimates and feasibility studies; drafts cost plans and schedules; prepares bills of quantities; participates in procurement and tendering procedures; and evaluates tenders (Stanley and Thurnell, 2014). In the post-construction phase, the QS provides general contractual advice; assesses interim payments; evaluates variation; prepares financial statements; settles final account; and gives alternative dispute resolution (ADR). Conversely, these monotonous and time consuming responsibilities have been found to be error-prone when conducted manually, which can be reduced through automation of the method by implementation of IT like building information modelling (BIM) (Ismail, Adnan, and Bakhary, 2019).

To achieve the automation of those processes, numerous software are obtainable in the market. For each software are specific proficiencies that suit the precise task at hand (Ismail et al., 2019; Wijayakumar, and Jayasena, 2013). Nonexistence of information concerning BIM use alongside unclear competence from novel tools has ensued unwillingness to implement innovative expertise amongst Qs (Wong, and Gray, 2019). However, existing research to investigate the awareness and usage of software by quantity surveyors in Nigeria is limited. This study therefore aims to appraise the awareness and usage of software by

quantity surveyors in the planning of building projects. This was achieved by the through the following objectives: (i). Review of existing literature to identify the existing factors of that influence awareness and usage of the planning software. (ii). Assessment of those factors. This study will help reduce the amount of errors in the quantity surveying tasks, improve consistency and speed in carrying out those tasks.

2.0 METHODOLOGY

In order to assess the of awareness of, and application of software in Quantity Surveying practice amongst consultancy firms in Kaduna State, a descriptive survey method was used in collecting relevant information from the population . The population was made up offorty seven (47) registered Quantity Surveying firms practising in the State based on the data retrieved from the Nigerian Institute of Quantity Surveyors' (NIQS) website.

A sample size of thirty two (32) firms was calculated using equation 1 below:

The formula:
$$n = \frac{n}{1 + \alpha^2 N} \dots\dots\dots (1)$$

Where:

n = sample size

N = size of population;

And α = alpha (0.10) by substituting the size of the population

$$\frac{n}{1 + \alpha^2 N} = \frac{47}{1 + 0.1^2 47} = 31.972 = 32$$

The sampling technique adopted for the study was random sampling to enable capturing accurately the firms and relevant data without any form of bias.

Data was collected using a structured questionnaire to elicit and facilitate quick responses from respondents in the study area. It generates data on the level of awareness and application software and the challenges. Data collected were analysed using

descriptive statistics such as simple percentages, frequencies and means as presented in equation 2. Relative importance index (RII) based on graduated response option of 5-point Likert type rating scale of Very good, Good, Undecided, Bad and Very bad were also used in the analysis as presented in equation 3. Results were presented using tables for easy understanding.

$$X = \frac{\sum fx}{\sum f} \dots\dots\dots (2)$$

Where:

X = Mean

F = frequency of the respondents' choice on each point on the scale

$$\text{Relative Importance Index (RII)} = \frac{\sum fx}{\sum f} \times \frac{1}{k} \dots \dots \dots (3)$$

Where:

K = maximum point on the Likert scale (in this case = 5)

Ranking of the items under consideration were based on their RII values. The item with the highest RII value is ranked first (1st), the next (2nd) and so on. Interpretations of the RII values are as follows:

RII < 0.60 item is assessed to have low rating.

0.61 ≤ RII < 0.80 item assessed to have high rating

RII ≥ 0.81 items assessed to have very high rating.

3.0 RESULTS AND DISCUSSION

A total number of 32 questionnaires were administered, filled and returned. The professional background of the persons who filled the questionnaires (chief executives officers) in the firms shows 2 Architects, 1 Engineer and 29 Quantity surveyors.

Table 1 presents the nature of the task engaged by the firms. 68.1% of the firms are consulting firms, 3.1% are project management firms and 28.8% are contracting firms.

Table 1: Type of Quantity Surveying Firm

Types of Qs Firm	Number	Percentage (%)
Consulting	21	68.1
Project Management	1	3.1
Contracting	10	28.8
Total	32	100

Table 2: Experience in Years

Years of Experience	Number	Percentage (%)
1-10 Years	22	68.8
11-20 Years	9	28.1
Above 20 Years	1	3.1
Total	32	100

Table 2 shows the years of experience of the firms in practice within the state. 68.8% of the firms have at most 10 years of experience, 28.1% of them have between 11 - 20 years of experience and 3.1% have above 20 years of experience. This shows that they are qualified for the assessment of their awareness and applicability of software in their practices.

Table 3: Range of Turn Over

Range of Turn Over	Number	Percentage (%)
Less than 10 million	1	3.1
10-50 million	25	80.3
60-100 million	2	6.2
Above 100 million	4	10.5
Total	32	100

Given the nature of the firms' turnover in Table 3, it is also evident that the firms are have the financial resources necessary for the implementation of some software to face the contemporary challenge of computer age. Thus, appropriate for awareness and application studies of modern technology in their day-to-day practice.

Table 4: Awareness of Planning Software

S/ N o.	Awareness factors	YES		Undecided		No	
		Freque ncy	Percen tage	Freque ncy	Percen tage	Freque ncy	Percen tage
1	Knowledge of the planning software	31	98.87	0	0	1	3.12
2	Use of the planning software	16	50.00	1	3.13	15	46.80
3	Access to Firms' Software	22	68.75	2	6.25	8	25.00
4	Presence of IT Division/ section	17	53.12	6	18.75	9	28.12
5	Retrievable IT Division /section	15	46.87	4	12.50	12	37.50
6	Evidence of using planning Software	28	87.50	0	0	4	12.50
7	Staff training on the use of Software	29	90.62	0	0	3	9.38

Table 4 shows reasonable percentages of firms' awareness of computer software for Quantity surveying practice. Factors 2, 4 and 5 show that there is evidence of inadequate use and application of software in day-to-day work. However, there is more development in terms of awareness as compared with Malaysia as only 54% of respondents used software for cost estimation as reported by Ting and Nurulhuda (2016). Thus, this call for the need to assess the level of provision of the common software for day-to-day use in firm as presented in Table 5.

Table 5: Availability of planning software

S/ No .	Planning software	Frequency					$\sum f$	$\sum fx$	X	RII	Rank
		1	2	3	4	5					
1	Microsoft Project	18	11	3	0	0	32	49	1.53	0.31	8
2	Easy Plan	2	18	7	4	1	32	80	2.50	0.50	6
3	TILOS (time location)	0	17	10	4	1	32	81	2.53	0.51	5
4	Micro Planner XPERT	5	12	10	4	1	32	80	2.50	0.50	6
5	Adept Tracker	4	10	11	4	3	32	88	2.75	0.55	1
6	Etaskmaker	2	15	10	2	3	32	85	2.66	0.53	3
7	PAL (planning/logistics)	3	16	9	3	1	32	79	2.47	0.49	7
8	P2WORLD	3	11	12	5	1	32	86	2.69	0.54	2
9	Planning Force	3	13	11	4	1	32	83	2.59	0.52	4

Table 5 shows the availability of some planning software packages in the firms. Majority of the firms are yet to adopt these planning software packages as evident from the results obtained showing well below the mean of 3.00. It generally seems there is a poor provision of the common computer software in the firms within the state, it has less conformity to what Bukola, (2008) established over a long time. This results in the values of RII having low level of importance as calculated.

Table 6: Challenges of usage of planning software

Sn	Usage indicators	Frequency					$\sum f$	$\sum fx$	X	RII	Rank
		1	2	3	4	5					
1	Organizational commitment	8	19	5	0	0	32	61	1.91	0.38	9
2	Level of computer appreciation	7	19	4	2	0	32	65	2.03	0.40	8
3	Frequent software Problems/errors	6	11	11	4	0	32	77	2.41	0.48	2
4	Generalization in use of the software	1	24	4	3	0	32	73	2.28	0.46	6
5	Leadership in the software purchases	5	15	8	0	0	32	67	2.09	0.42	7
6	Adequate selection of the software	3	15	14	0	0	32	75	2.35	0.47	3
7	Role of traditional type over new	8	22	1	1	0	32	59	1.84	0.36	10
8	Problem of handling recent software	5	13	8	5	1	32	80	2.50	0.59	1
9	Rate of firm development using software	2	21	6	3	0	32	74	2.34	0.46	4
10	Rate of traditional Software development	3	15	11	2	0	32	74	2.31	0.46	5

Table 6 shows the responses on the challenges faced in the use of planning software by the firms. The factor with the highest mean score is ‘Problem of Handling Recent Software’ with a mean score of ‘2.50’. The low scores may be attributed to the low usage and application or patronage of the software based on the RII values as shown above.

Table 7: Barriers or hindrances computer software

Sn	Barriers or Hindrances	Frequency					$\sum f$	$\frac{\sum f}{x}$	X	Rank
		1	2	3	4	5				
1	High acquisition cost of software	8	22	0	2	0	32	60	1.87	7
2	Lack of adequate manpower skills	7	20	5	0	0	32	62	1.93	6
3	Equity Issues software development	4	11	16	1	0	32	78	2.43	2
5	Inadequate growth rate of the software	8	10	9	5	0	32	75	2.34	3
5	Gender differences of software experts	3	13	14	2	0	32	79	2.46	1
6	Level of different usage of the software	5	19	7	1	0	32	68	2.13	4
7	Psychological and cultural impact	4	21	6	1	0	32	68	2.12	5

Table 7 shows the distribution of the barriers/hindrances to the use of planning software. The highest ranking factor is having a mean score of ‘2.46’ which is slightly below moderate. This shows that the barriers are not having serious effects on the firms. This result is not very different from that of Oyediran and Odusami, (2005) in terms of high cost of software as it is rated very low amongst the challenges. However, this study does not consider access to electricity and other communication infrastructure as challenges or hindrances as highlighted by Oladapo (2007) as result of development in alternatives over time.

4.0 CONCLUSION

Result from this research shows that the respondents have adequate level of awareness of planning software in project management. This result concluded that there is very good awareness of planning software among QS firms in Kaduna state. This result however differs from past researches such as that of Oladapo (2007).

As IT and software make work faster, easier and neater to accomplish, it positively depends on manpower. Therefore, more attention is imperative should be given to that aspect as result from this research shows that attention on that is lacking. While several barriers and hindrances such as high acquisition cost, lack of manpower skills in computer literacy and high cost of training also remain unattended.

No doubt that very good computer application and IT compliance is a pre-requisite to and principal tools that facilitate project management. It is therefore recommended that, an avenue should be created for training professionals particularly on the usage and application of planning software and also for organisations to make very good provision of IT facilities. Students in the universities and polytechnics should be taught how to use the software in their syllabuses. Professional bodies should also encourage their members on the usage of the

software through workshops, seminars and conferences.

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