



Assessment of the Involvement of Quantity Surveyors in the Measurement of Electrical Services for Buildings in Kaduna State, Nigeria

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Abstract

The preparation of bills of quantities for electrical services has been considered as one of the essential knowledge areas for quantity surveyors in managing the cost of building services. Previous research have indicated that the level of involvement of quantity surveyors in the measurement of electrical services In Nigeria is low. This study aimed at assessing the extent to which quantity surveyors are involved in the measurement of electrical services in Kaduna State, Nigeria. A qualitative approach was used for this study with semi-structured interviews conducted with some quantity surveyors to collect data. Data collected was analysed using constant comparative analysis method. The results showed that a large percentage (75%) of quantity surveyors in Kaduna State, Nigeria are involved in the measurement of electrical services for building projects. The study concluded that for more realistic cost estimates in electrical services, detailed measurement rather than the use of lump sum amounts should be encouraged. The study recommended that quantity surveyors should updated their measurement skills on electrical services through continuous professional development.

Keywords: Involvement, Lump Sum, Measurement, Mechanical and Electrical Services, Quantity Surveyors

1. Introduction

According to Nyamekye et al., (2023) the cost of mechanical and electrical (M&E) services accounts for considerable part of the total cost of a building. Research has shown that the cost associated with M&E services constitute about 20-30% of the total project cost, and sometimes even higher (Simon & Andy, 2012 as cited in Olawumi, 2014). Shittu and Izam (2011) reported that building services accounts for 10-15% of the total project cost, and more than 50% in other building types such as laboratories. However, depending on the



use of the building and the level of sophistication of the building services, the cost of building services can make up between 15 and 70% of the entire cost of the building. In Malaysia, for example, the cost is approximately 40% of the total building cost (TEEAM, 2010).

The involvement of quantity surveyors in the measurement of electrical services for building projects is facing a lot of challenges. Studies have shown that 34.17% of electrical services are measured in detail, while 65.83% were calculated using provisional amounts leading to substantial cost inaccuracies (Alolote Ibim & Dimkpa, 2020). Although, M&E services is very much a part of the construction project, Ashworth (2013), state that the quantity surveyor has a tendency to perform it as a specialist work, especially on large complex projects. The costs associated with the components that make up this work keep rising. Traditionally, large portion of this work was included as prime cost (PC) sums in the bills of quantities (BoQ). More informed clients understood that the lump sum approach was not generally effective at identifying the actual expenses associated with this work. M&E services experts occasionally oppose detailed quantification, but there is now a clear desire for a systematic breakdown of costs that can be adequately compared and analyzed (Ashworth, 2013).

2. Literature Review

According to Arowoia et al., (2022) the most crucial knowledge areas for quantity surveyors in the cost management of building services are preparing BoQ for M&E services, valuing M&E works, measuring M&E services engineering works, estimating techniques, quality management/assurance knowledge, and financial control. However, Ebekozi et al. (2015) reported that there is low involvement of quantity surveyors in the measurement of electrical services in Edo state, Nigeria. Yusuf and Mohamed (2012) assert that BoQ are still produced in lump sums and provisional sums, which makes it difficult to obtain realistic and useful cost information from previous projects. Regretfully, quantity surveyors have not given the cost management and procurement process of M&E services the attention it deserves. The system of assigning deterministic lump sum figures from



historical data rather than performing precise measurements has been blamed for the inaccurate cost projection for building services (Alolote Ibim & Dimkpa, 2020). According to Babalola and Adesanya (2007) majority of engineering services building projects in Nigeria lack comprehensive services drawings at the project's design stage, making it impossible to prepare a detailed BoQ for the services aspect for such a project.

A number of studies have brought attention to the more subtle problems that stand in the way of a thorough assessment of electrical services. Previous studies, such as those conducted by Ebekoziem et al. (2015) identified lack of electrical drawings, inexperience of the quantity surveyor measuring electrical services, clients being in a rush to go to tender before detailed designs are ready, and delayed arrival of electrical drawings for measurement as causes for the omission of electrical services from BoQ. Yusuf and Mohamed (2014), Babalola and Adesanya (2008), Swaffield and Pasquire (2000), and other more recent works have identified factors such as lack of familiarity with the technical engineering terminology used in electrical drawings, lack of knowledge gaps and proficiency in adopting standard rules of measurement as applied to electrical works, perception of electrical services as highly specialized domains, difficulty reading and interpreting electrical drawings and lack of proficiency in extracting quantities from drawings for pricing purposes.

Very few studies in Nigeria on this area exist (Arowoia et al., 2022; Alolote Ibim & Dimkpa, 2020; Ebekoziem et al., 2015; Yusuf & Mohamed, 2014; Yusuf & Mohamed, 2012; Shittu & Izam, 2011; Babalola & Adesanya, 2008; Babalola & Adesanya, 2007). There is no study on the involvement of quantity surveyors in the measurement of electrical services in Kaduna State, Nigeria. Therefore, this study will explore the extent to which quantity surveyors are involved and the methods used in the measurement of electrical services in Kaduna State, Nigeria.



3. Methodology

The study employed a qualitative approach, using semi structured interviews to collect the views of quantity surveyors on their involvement in the measurement of electrical services for building projects. The study targeted quantity surveyors working in public and private organizations within Kaduna State, Nigeria as respondents. Purposive sampling technique was used in the selection of the study respondents. Purposive sample sizes are often determined on the basis of theoretical saturation (the point in data collection when new data no longer bring additional insights to the research questions). According to Creswell (2011), it involves the identification and selection of persons or group of persons that are competent and abreast with a situation of interest. In addition to knowledge and experience (Bernard, 2002).

A sample of twenty (20) professional quantity surveyors was used in this research in accordance with the stated saturation point for qualitative research. According to Guest et al. (2006) and Neilsen and Landauer (1993), six (6) interviews is enough to provide adequate information for a qualitative research which has reached a saturation point. However, smaller qualitative samples of less than twenty (20) per research was recommended (Crouch & Mckenzie, 2006). Data collected were analyzed using constant comparative method. It compared data with others that are comparable or different (one interview, one statement, one topic matter) (Thorne, 2000).

4. Results

The results of the interview as discussed with the respondents centered on the involvement of quantity surveyors, the methods of measurement adopted, and the challenges faced in the measurement of electrical service for building projects in Kaduna State, Nigeria.

4.1 Level of involvement of quantity surveyors in the measurement of electrical services

The interviewer sought to know the level of involvement of quantity surveyors in the measurement of electrical service for building projects. The interviewees expressed wide



ranging views on their level of involvement. Most of the quantity surveyors (75%) stated that they have been involved in the measurement of electrical service during the preparation of BoQ. However, few of them (25%) claimed that they were not fully involved.

4.2 Methods used in arriving at the final cost for electrical services

The interviews primarily focused on the methods of measurement adopted in arriving at the final cost for electrical service. The majority of the respondents (65%) stated that they usually carry out detailed measurement of the services components on most projects they have been involved because complete designs are always available at the onset to prepare detailed bills. However, few of the respondents (35%) claimed that they usually include lump sum amount, provisional quantities or PC sum in the BoQ due to incomplete designs and the fact that electrical services is usually considered as a specialized area that requires technical know-how.

4.3 Challenges encountered by quantity surveyors

On the challenges encountered by quantity surveyors during the measurement of electrical services. The response from most of the interviewees (60%) identified lack of detailed electrical designs as one of the major challenges hindering the preparation of detailed BoQs. This normally affects the level of details and usually led to all kinds of variations and inaccurate estimation for engineering services. However, insufficient knowledge and experience on the part of the quantity surveyors in the measurement of electrical services has been identified by some of the respondents (40%) as another challenge.

5. Discussion

5.1 Level of involvement of quantity surveyors in the measurement of electrical services

The findings of this study shows that a large percentage of quantity surveyors in Kaduna State, Nigeria are involved in the measurement of electrical services. This finding do not align with that reported by Ebekozi et al. (2015) whose study revealed that the level of involvement of quantity surveyors in the measurement of electrical services in Edo state, Nigeria is low.

5.2 Approach adopted in arriving at the final cost for electrical services



According to the respondents' comments, the electrical services component of most projects were measured in detail because of the availability of complete designs. This is not consistent with previous research findings on a six-year sample of quantity surveyors' bills for electrical installations by Alolote Ibim and Dimkpa (2020) who reported that 34.17% were measured in detail while 65.83% of BoQ quantified by quantity surveyors in Port Harcourt, Nigeria were prepared using provisional amounts. Similarly, the results also revealed that some BoQ for electrical services are still prepared by quantity surveyors using lump sum amounts or provisional quantities. This finding aligns with that reported by Yusuf and Mohamed (2012) that BoQ are still produced in lump sums and provisional sums, which makes it difficult to obtain realistic and useful cost information from previous projects.

5.3 Challenges encountered by quantity surveyors

The study discovered that lack of detailed electrical design is one of the major challenges preventing the preparation of detailed BoQ by quantity surveyors in Kaduna State, Nigeria. This result corroborated the claim made by Babalola and Adesanya (2007) that majority of engineering services building projects in Nigeria lack comprehensive services drawings at the project's design stage, making it impossible to prepare a detailed BoQ for the services aspect for such a project. The participants also acknowledged that insufficient knowledge and inexperience in the measurement of electrical services has been one other challenge facing quantity surveyors. This finding is in agreement with the assertion made in the literature by Yusuf and Mohamed (2014), Babalola and Adesanya (2008), Swaffield and Pasquire (2000), and other more recent works that identified factors such as lack of familiarity with the technical engineering terminology used in electrical drawings, lack of knowledge gaps and proficiency in adopting standard rules of measurement as applied to electrical works, perception of electrical services as highly specialized domains, difficulty reading and interpreting electrical drawings and lack of proficiency in extracting quantities from drawings for pricing purposes.

6. Conclusion

This study examined the level of quantity surveyors involvement in the measurement of electrical services in Kaduna state, Nigeria. The findings of the study revealed that quantity



surveyors in Kaduna State are involved in the measurement of electrical services for building projects. This implies that, although the level of involvement is high, there is a tendency that lack of electrical services design could be a major challenge preventing the detailed measurement of electrical services and its inclusion in the BoQ. Therefore, for more realistic cost estimation in electrical service, detailed measurement rather than the use of lump sum amounts should be encouraged. The findings emphasises the importance of continuous professional development on the measurement of electrical services through continuous educational programmes to ensure that the quantity surveyors are up to date with the latest measurement techniques.

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