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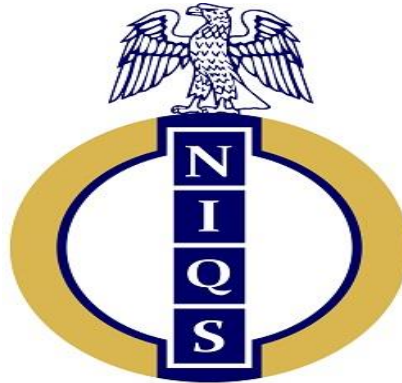
26th - 27th October, 2022

PROCEEDINGS:

**Confluence of Research, Theory and
Practice in the Built Environment**



EDITORS:
A. C. Ogwuelka
S. B. Ekung
C. F. Asuquo
N. E. Udo
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ASSESSMENT OF THE STRATEGIES FOR MINIMISING THE EFFECTS OF TENDER-RELATED RISKS ON CONSTRUCTION PROJECTS PERFORMANCE

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ABSTRACT

The construction industry is still a high risks sector owing to the project complexity, unique nature, stakeholders involved, and procurement systems. Risks and uncertainties are associated with every stage of the construction project, although, most of the risks at the construction stage are incubated at the pre-contract stage. Tender-related risks impact the success of the contractors as well as the performance of the project. However, there has not been a dedicated study by researchers to curtail this. Therefore, this study assessed the strategies for minimising the effects of tender-related risks on construction project performance. The well-structured questionnaire was adopted for data collection from construction experts engaged by construction-based organisations in Abuja, Nigeria, using the purposive sampling method. With a response rate of 40.80% and a reliability index of 0.901, the gathered data were analysed using frequency, percentage and mean score. It was found that the major strategies for minimising the effects of tender-related risks on construction projects' performance are; top management understanding of modern techniques and principles needed for efficient and effective tendering is required by the management of contracting businesses, effective and efficient documentation preparations, studying the drawings by comparing the specifications and the real conditions in the project site where possible, reading/checking all documents issued, assigning experienced people in planning cost estimation, and calculating the volume of work accurately. It is recommended that a clear understanding of modern techniques and principles of tendering by management, as well as training and workshop on tendering and risks management are key to ensuring a sustainable reduction of tender-related risks in construction.

Keywords: *Strategies, Tender-related risks, construction projects, construction performance, Nigeria*

INTRODUCTION

Globally, the construction industry is central and critical to the economic growth and development of nations. According to Eze et al. (2020; p.38), "the construction sector is the economic prime mover and the bedrock of survival of nations". The provision of buildings, roads, and bridges, among other structures, job creation, contribution to gross domestic product (GDP) and national income; are all evidence of the contributions to economic growth and

development of the economy of the world (Ahmed, 2017; Onyeagam et al., 2019). However, the high risks and uncertainties associated with construction projects, limit their capacity to deliver the needed benefits to the economy. The presence of risks which cut across the life cycle (pre-construction, post-construction, facility operation and maintenance), impact the key project objectives of time, cost, quality and satisfaction of parties (Bahamid et al., 2019; Banobi and Jung, 2019), thus, leading to the overall poor performance of construction contractors and projects. While the complexity and operating environment of the construction industry are to be blamed for this, various sources and categorised of risks have been identified (Oyegoke, 2006; Dosumu, 2016; Yadeta, 2020), one of which is tendering risks.

Risks are unforeseen events and /or uncertainty that impact project success. When construction activities are exposed to risks, they result in economic losses, delays, cost overruns, claims, and disputes (Oyewobi et al., 2012). Most of the risks discovered at the construction phase of a project are hidden and unobserved at the pre-contract stage, that is, during the tender stages. Tendering is the administrative procedure of sending out drawings, specifications and bills of quantities to construction firms with the intention to submit a price for the construction of the project. Besides the price for a project, other considerations such as contractor's competence, financial capability, technical competence, and other factors are used in selecting a contractor for executing a construction project. Different tendering methods have been used in construction projects for inviting tenders. Saaidin et al. (2016) had established that risk exposure is highest during the pre-contract stage, without showing if the risks observed in the post-contract stage are the same as those in the pre-contract stage. Skitmore and Drew (2003) considered that the dichotomy between the pre-contract and post-contract stages of a construction project renders estimating and pricing at the tender stage more difficult. This arises in part from a contractor trying to put a price on a design that the contractor had no part in producing (Urquhart and Whyte, 2020).

Construction projects in the developing world, whether publicly or privately owned, are rarely completed within their planned schedules and budgets. The level of risk and uncertainty under which construction projects are delivered in developing countries is very high, and Nigeria is no exception. Construction projects are delivered in stages; from project conception through design, construction and maintenance/facility operation. Construction risks are traceable to various factors which include risks of estimating and pricing, time and cost overruns, amongst others (Oyewobi et al, 2012). These risks, which are at their peak during the tendering phase of projects, have to be dealt with by governments, consultants and contractors, who, according to Tipili and Yakubu (2016), are the parties that are mostly involved in construction activities in Nigeria. The low-cost mentality of construction contractors has put them under pressure to win enough bids to ensure the growth and survival of their companies (Oke et al., 2017), more so given the lowest bid culture of the industry, which impacts the successful contractors' capability to meet key project performance objectives (Xiaohong, 2011; Banobi and Jung, 2019).

A review of extant literature shows a dearth of studies on the minimisation of the effect of tendering risks on construction performance, in the Nigerian context. Studies on risks

associated with Tendering and procurement in construction have merely recommended possible ways of reducing the risk factors at the tender stage confronting contractors (Odeyinka et al., 2005; Oyewobi et al., 2012; Ogunsanmi, 2013; Oke et al., 2017; Obodo et al., 2021). A dedicated study on the strategies for minimising the impact of tender-related risks is lacking. It is on this knowledge that this study is embarked. *The aim of this study is to assess the strategies for minimising the effects of tender-related risks on construction project performance.* This study becomes necessary as there are high levels of risks associated with the pre-contract state (Saaidin et al., 2016; Skitmore and Drew, 2003). The outcome of this would give a clear insight into the various measures for minimising the prevalence of tenders and their effects on the performance of the contractors on the project. It will also add to the existing body of knowledge on tender related risks minimisation measures, particularly on construction projects.

LITERATURE REVIEW

Strategies for minimising the effects of tender-related risks on construction projects' performance

Several studies have identified the risk factors as well as project characteristics influencing the contractors' tender price at the pre-contract stages of construction projects. A lot of efforts are expended at the pre-construction/tender stage of projects by the clients and consultants in an attempt to secure a suitable contractor for a proposed project. The contractors also make efforts to remain in business by ensuring that they secure jobs using available resources. Construction projects suffer from cost overruns, time overruns, and quality problems when the tender-related risks are not sufficiently minimised or eliminated (Odeyinka et al., 2005). Oke et al. (2017) submit that tendering for jobs and winning of construction contractors by contracting organisations, are ways of improving competitiveness and survival in the construction sector. Clear knowledge and understanding of the modern techniques and principles needed for efficient and effective tendering are required by the management of contracting businesses. Regular training and development of technical, professional and management staff involved in tendering and commercial activities of the construction organisations. These would assist in curtailing the risks inherent in tender pricing, especially as it impacts negatively on project cost and time, and other performance parameters (Oke et al., 2017).

A similar submission was made by Yuni et al. (2017) in the Indonesian construction industry. It was suggested that the risks associated with tender pricing of the contractor at the pre-contract stage can be minimised in order to ensure that the project budget and schedule are not exceeded and that better quality of work is done. Some of the suggested strategies are; reading/checking all documents issued, assigning experienced people in planning cost estimation, studying the drawings by comparing the specifications and the real conditions in the project site where possible, calculating the volume of work accurately, requesting completeness of detailed drawings, study all the tender drawings to ensure that the architectural, structural, MEP, are not in divergence to each other, double-check of summation and multiplication to avoid errors in estimates, make sure there is a match between the scope

of work defined in the BOQ and specifications offered. Ugochukwu & Okolie (2013) recognised that the present tendering duration in the public construction projects in Nigeria is inadequate and this has been blamed on insufficient experienced, wrong estimating and pricing techniques, and cutting of corners to obtain contracts awards. These have caused dissatisfaction, claims and disputes among parties to the contract. The study recommended for establishment of a suitable framework for assessing the expertise of tenderers, ensuring adequate regulation of contracting organisations and practices, and incorporating standards and weeding out quacks during tendering, among others.

In the Malaysian construction industry, Saaidin et al. (2016) recommended that the risks variables that influence contractors' tender price can be minimised by; implementing the organisational policy on quality to minimise risk and boost profitability, using contingency during the pricing of tenders, effective and efficient documentation preparations, use of experienced and competent designers, and engaging competent contractors with proven track records. These would improve pricing and reduction of the effect of tendering issues on the performance of the projects. In order to reduce the effect of pre-tender estimating on the final cost of construction projects. Cong et al. (2014) In New Zealand states that a more reliable price estimate for a contract should be prepared by the quantity surveyors at the pre-contract stage. This was said to also improve construction-stage cost control activities.

Ogunsanmi (2013) concluded that procurement and tendering related activities have an impact on the construction project's time, cost and quality performance. The study recommended for timely appointment of the key stakeholders prior to tendering stage, and appropriate procurement and tendering method selection for better project performance. Tipili and Yakubu (2016) posit that a larger proportion of the construction stakeholders are unfamiliar with risk management processes. The study suggested for risk management workshops to help improve the understanding of risk management on construction projects. In the study carried out by Oyewobi et al. (2012), it was recommended for strategies for minimising the impact of estimating risk on a contractor's tender figure for a public project. These strategies include; engagement of competent contractors, adding of premium to quotation and time estimating by contracting organisations, following risks management procedures by construction experts during estimating to help meet the budget target, and training courses on risks minimization in building projects should be organised for engineers, project managers and quantity surveyors, and contractors should minimise the dependence on loans by pricing variable which could trigger financial failures.

Table 1 below is a summary of selected strategies for minimising the effects of tender-related risks on construction projects' performance.

RESEARCH METHODOLOGY

This study followed the methodological flow chart in figure 1 below. The purpose of this study was to assess the strategies for minimising the effects of tender-related risks on construction project performance. The questionnaire was developed after an extensive literature review and used to collect data from construction professionals in construction and consulting organisations in Abuja. This is in order to meet the purpose of this study. The choice of Abuja was premised on the number of available projects being undertaken by the private and public sectors in the seat of power of Nigeria. The rate of provision of building and infrastructure is unprecedented in Abuja, the capital of Nigeria (Adegboyega et al., 2021). The sample professionals include Architects, Builders, Civil Engineers, and Quantity Surveyors. The Contractors were chosen in addition to the consultants because the failures in the performance of construction projects are blamed on the contractors. This is due to the understanding that the contractors are responsible for the execution of the building works, thus, their performance influences the success of the projects (Onyejeakor et al., 2019). The Questionnaire is common in social research, and it has the capacity to reach a wider audience in a shorter time and at an economical cost (Tan, 2008).

The questionnaire used was designed into two sections. The first section gathered data on the background information of the respondents, and the second section gathered data on the participants' rating of the strategies for minimising the effects of tender-related risks on construction project performance. The respondents were required to rate the variables on a 5-point Likert scale; where 1 = the lowest scale and 5 = highest scale. 250 well-structured questionnaires were purposively administered to the participants in the study area, and at the end of the survey, 102 responses were obtained out of 250 distributed. This represents a response rate of 40.80% and was deemed adequate for the analysis. The response rate is acceptable for statistical and reliable analysis, as it is over 30% (Ye et al., 2015). The reliability evaluation result indicates that the questionnaire is reliable and has very high internal consistency. This is based on the Cronbach's alpha value of 0.901 obtained for the variables assessed. This is in line with the suggestion of (Pallant, 2005). The data garnered on the background information of the respondents were analysed using frequencies and percentages. Data gathered on the strategies for minimising the effects of tender-related risks on the construction project performance were analysed using the mean score.

Table 1: Strategies for minimising the effects of tender-related risks on construction projects' performance

S/N	Strategies	Source(S)
1	Top management Understanding of modern techniques and principles needed for efficient and effective	Yuni et al. (2017); Oke et al. (2017); Tipili and Yakubu (2016)
2	Regular training and development of technical, professional and management staff involved in tendering and commercial activities	Oke et al. (2017a); Yuni et al. (2017);. Ogunsanmi (2013) ; Tipili and Yakubu (2016); Oyewobi et al. (2012)
3	Reading/checking all documents Issued	Yuni et al. (2017)
4	Assigning experienced people in planning cost estimation	Yuni et al. (2017)
5	following risks management procedures by construction experts during estimating to help meet the budget target	Oyewobi et al. (2012); Tipili and Yakubu (2016)
6	Studying the drawings by comparing the specifications and the real conditions in the project site where possible	Yuni et al. (2017)
7	Calculating the volume of work accurately	Yuni et al. (2017)
8	Request completeness of detailed Drawings	Yuni et al. (2017)
9	Study all the tender drawings to ensure that the architectural, structural, and MEP, are not in divergence from each other.	Yuni et al. (2017)
10	Double-check summation and multiplication to avoid errors in estimates	Yuni et al. (2017)
11	Make sure there is a match between the scope of work defined in the BOQ and the specifications offered	Yuni et al. (2017)
12	Implementing the organisational policy on quality to minimise risk and boost profitability	Saaidin et al. (2016)
13	Using of contingency during the pricing of tenders	Saaidin et al. (2016);Oyewobi et al. (2012)
14	Effective and efficient documentation preparations	Saaidin et al. (2016)
15	Use of experienced and competent designers	Saaidin et al. (2016)
16	Engaging competent contractors with proven track records	Saaidin et al. (2016); Oyewobi et al. (2012); Ogunsanmi (2013)
17	establishment of a suitable framework for assessing the expertise of tenderers	Ugochukwu & Okolie (2013)
18	ensuring adequate regulation of contracting organisations and practices	Ugochukwu & Okolie (2013)
19	incorporating standard and weeding out quacks during tendering	Ugochukwu & Okolie (2013)

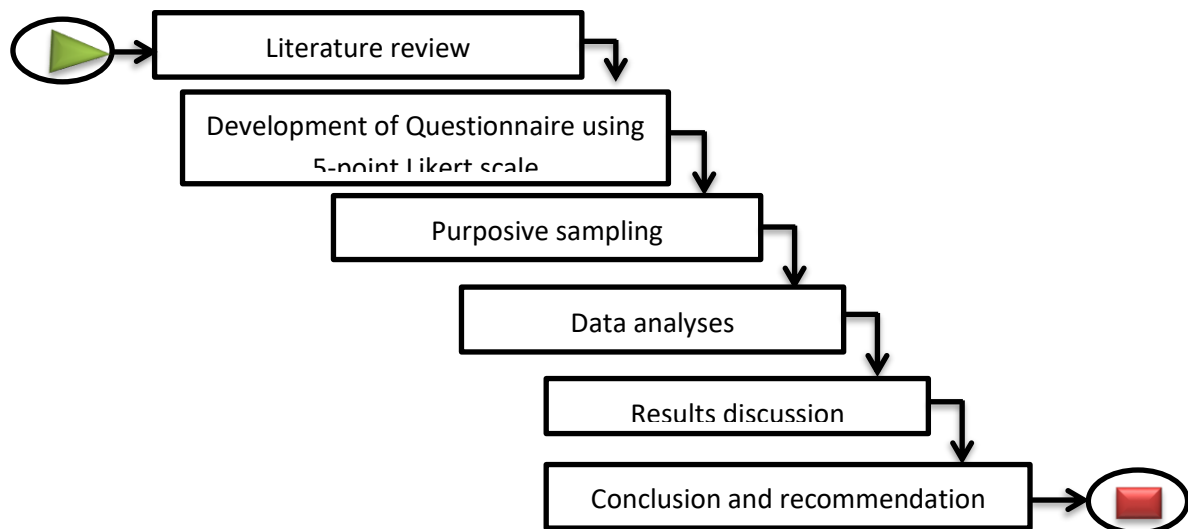


Figure 1: Research methodological flow chart

RESULTS AND DISCUSSION

Background Information of the Respondents

From Table 2, the distribution of the ages of the participants showed that 14.71% of the respondents are aged less than 25years, 53.92% are 25-35years old, and 17.65% are 36-45years old, and 13.73% are more than 45years old. 59.8% of the respondents are males and 40.20% are females. In terms of employer type, 59.8% are employed by contractors and 40.20% are employed by consultants.

It can be seen that based on the profession of the participants' Architects are (14.71%), Builders (12.75%), Engineers (43.14%), and Quantity surveyors (29.41%). In terms of academic qualification, 67.65% hold HND/ BSc/M.Tech, 27.45% hold MSc./M.Tech and 4.90% hold a PhD. Based on their year of working experience, 13.73% have less than 5years experience, 41.18% have 5-10years experience, 32.35% have 11-15years, and 12.75% have more than 15years experience. Overall, the respondents have qualified academically, and professionally and have the requisite experience that will aid this study.

Table 2: Respondent particulars

Category	Classification	Freq.	Per cent	Cumm. Per cent
Age	Less than 25 yrs	15	14.71%	14.71%
	25 yrs – 35 yrs	55	53.92%	68.63%
	36 yrs – 45 yrs	18	17.65%	86.27%
	More than 45 yrs	14	13.73%	100.00%
	TOTAL	102	100%	
Gender	Female	41	40.20%	40.20%
	Male	61	59.80%	100.00%
	TOTAL	102	100%	
Employer type	Contractor	61	59.80%	59.80%
	Consultant	41	40.20%	100.00%
	TOTAL	102	100%	
Type of work (Professionals)	Architecture	15	14.71%	14.71%
	Building	13	12.75%	27.45%
	Civil Engineering	44	43.14%	70.59%
	Quantity Surveying	30	29.41%	100.00%
	TOTAL	102	100%	
Education	HND/B.Sc	69	67.65%	67.65%
	M.Sc	28	27.45%	95.10%
	PhD	5	4.90%	100.00%
	TOTAL	102	100%	
Work experience	Less than 5 yrs	14	13.73%	13.73%
	5 yrs – 10 yrs	42	41.18%	54.90%
	11 yrs – 15 yrs	33	32.35%	87.25%
	More than 15 yrs	13	12.75%	100.00%
	TOTAL	102	100%	

Strategies to mitigate the influence of the tender related risks on the cost and time performance of construction projects

The result of the analysis in Table 3 shows the strategies to mitigate the influence of the tender related risks on the cost and time performance of construction projects. It can be seen that the

top 5 most important strategies to mitigate the influence of the tender related risks on the cost and time performance of construction projects are; Top management Understanding of modern techniques and principles needed for efficient and effective tendering is required by the management of contracting businesses (mean=4.55; S.D.=0.6983), effective and efficient documentation preparations (mean=4.41; S.D.=0.7879), studying the drawings by comparing the specifications and the real conditions in the project site where possible (mean=4.38; S.D.=0.9015), reading/checking all documents Issued (mean=4.34; S.D.=1.1124), assigning experienced people in planning cost estimation (mean=4.32; S.D.=1.1446), and Calculating the volume of work accurately (mean=4.32; S.D.=0.9137).

Table 3: Strategies for minimising the effects of tender -related risks on construction projects performance

S/N	Strategies for minimising the effects of tender -related risks	Mean score	S.D	Rank
1	Top management Understanding of modern techniques and principles needed for efficient and effective tendering is required by the management of contracting businesses	4.55	0.6983	1 st
2	Regular training and development of technical, professional and management staff involved in tendering and commercial activities	4.31	1.1430	7 th
3	Reading/checking all documents Issued	4.34	1.1124	4 th
4	Assigning experienced people in planning cost estimation	4.32	1.1446	5 th
5	following risks management procedures by construction experts during estimating to help meet the budget target	3.67	1.3883	18 th
6	Studying the drawings by comparing the specifications and the real conditions in the project site where possible	4.38	0.9015	3 rd
7	Calculating the volume of work accurately	4.32	0.9137	5 th
8	Request completeness of detailed Drawings	4.21	0.9048	9 th
9	Study all the tender drawings to ensure that the architectural, structural, and MEP, are not in divergence from each other.	4.17	0.8335	10 th
10	Double-check summation and multiplication to avoid errors in estimates	4.16	0.8982	11 th
11	Make sure there is a match between the scope of work defined in the BOQ and the specifications offered	3.84	1.2645	15 th
12	Implementing the organizational policy on quality to minimise risk and boost profitability	4.11	1.0236	12 th
13	Using of contingency during the pricing of tenders	3.44	1.2864	19 th
14	Effective and efficient documentation preparations	4.41	0.7879	2 nd
15	Use of experienced and competent designers	4.30	0.7418	8 th
16	Engaging competent contractors with proven track records	3.89	1.2735	14 th
17	establishment of a suitable framework for assessing the expertise of tenderers	3.95	1.2054	13 th
18	ensuring adequate regulation of contracting organisations and practices	3.84	1.2487	15 th
19	incorporating standard and weeding out quacks during tendering	3.72	1.2694	17 th

While, the least five strategies to mitigate the influence of the tender related risks on the cost and time performance of construction projects are; Make sure there is a match between the scope of work defined in the BOQ and specifications offered (mean=3.84; S.D.=1.2645), ensuring adequate regulation of contracting organisations and practices (mean=3.84; S.D.=1.2487), incorporating standard and weeding out quacks during tendering (mean=3.72; S.D.=1.2694), following of risks management procedures by construction experts during

estimating to help meet the budget target (mean=3.67; S.D.=1.3883) and using of contingency during the pricing of tenders (mean=3.44; S.D.=1.2864).

Regardless of the relative ranking of the assessed strategies, they are all effective strategies for mitigating the influence of tender related risks on the cost and time performance of construction projects. This is premised on the range of the mean score obtained with the maximum mean score of 4.55 (90.98%) and a minimum of 3.44(68.82%), and an average score of 4.10 (82.04%). The result obtained in this study is in support of what has been reported in previous studies (Yuni et al., 2017; Saaidin et al., 2016; Oke et al., 2017; Tipili and Yakubu, 2016). Yuni et al. (2017) in Indonesia suggested that the minimisation of tender risks challenging the tenders by contractors is; a careful study of all documents related to the proposed project. This includes the checking of drawings, specifications, and BOQ, and ensuring that the information contained is correct and that there are no discrepancies between drawings and specifications and the BOQ. Furthermore, experienced professionals should be engaged in planning and cost estimation of construction work items. The use of competent contractors was also stressed by (Oyewobi et al., 2012). This is because a larger proportion of tender based risks are minimised and/or even avoided during tendering by experienced contractors. This will help to minimise the impact of tender risks on the time and cost performance of construction projects. The use of experienced and competent design consultants and the employment of competent contractors with proven track records; improve pricing and reduction of the effect of tendering risks on the performance of the projects (Saaidin *et al.*, 2016).

A conscious pricing and quality policy implementation and the provision of enabling environment by top management are key to ensuring the reduction of the impact of tender-related risks on project time and cost. This according to Saaidin et al. (2016) will minimise risk and enhance profitability. A clear comprehension of the principles and techniques of effective and efficient pricing and tendering by top management will help give direction to the organisations. Also, regular training of the key technical staff on the processes of tendering will impact the quality of documents produced. According to Oke et al. (2017), these will help to improve the contractor's competitiveness and survival in the construction industry. Risk management workshops to improve understanding of pre-contract and post-contract risks have been recommended by (Tipili and Yakubu, 2016).

CONCLUSION

This study assessed the strategies for minimising the effects of tender-related risks on construction project performance. A survey approach was adopted in the study using a well-structured questionnaire and purposive sampling procedure to collect data from construction professionals in Abuja, Nigeria. The data were analysed using descriptive statistics and some critical findings were made and research questions were answered.

It was found that the major strategies for minimising the effects of tender-related risks on construction projects' performance are; top management understanding of modern techniques and principles needed for efficient and effective tendering is required by the management of contracting businesses, effective and efficient documentation preparations, studying the

drawings by comparing the specifications and the real conditions in the project site where possible, reading/checking all documents issued, assigning experienced people in planning cost estimation, and calculating the volume of work accurately. This study recommends the following based on the major findings; adequate top management support and understanding of the key techniques and principles for effective and efficient tendering are required. Regular training of technical, and management staff on tendering and trends in risk management in construction is needed. Experienced consultants and contractors are required to improve the quality of contract documentation and pricing, and to improve the outcome of other pre-contractors' activities.

The outcome of this study will aid contractors and other decision-makers in making the appropriate decision regarding the risk mitigation strategies to curtail the effect of pre-tender risk elements on time and cost performance during the construction stage. This study will add to the existing body of knowledge on tender related risks minimisation measures, particularly on construction projects. This study is, however, limited by geographical boundary, sample size and sampling techniques. A similar study is recommended to be carried out in a different state, region or country using a randomised sampling technique and considering a larger sampled size. This will provide results for comparison purposes.

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