World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(REVIEW ARTICLE)

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Assessment of quantity surveyor's perception on risk management practice in construction projects in Ebonyi state

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World Journal of Advanced Research and Reviews, 2022, 16(03), 433–445

Publication history: Received on 29 October 2022; revised on 06 December 2022; accepted on 09 December 2022

Article DOI: https://doi.org/10.30574/wjarr.2022.16.3.1324

Abstract

The roles of Quantity Surveyors, who are the construction economists is to support cost effectiveness of construction projects planning through the pre-construction stage to post construction stage of projects. Despite being recognized as a professional discipline, Quantity Surveyors are not immune to the threats and risks in their operating environment. Consequence of which when poorly managed may be detrimental to Quantity Surveying practice and overall performance of construction project. Therefore, the study assesses the risk management techniques of the Quantity Surveyors in construction projects with a view of enhancing a better performance in project delivery. The construction industry is subject to more risk than any other industry. Risk management has become an integral process in managing construction projects. To complete most construction project on time, minimizing cost and wastages proper risk management techniques must be employed. Some authors of journals, conferences, text written by professional were consulted and datas were collected with the aid of well-structured questionnaires administered to forty six (46) respondents. The data generated were further analyzed using descriptive statistical tools such as percentages, frequencies and mean index score (MIS). The research findings identified that most Quantity Surveyors understand and practice risks management in construction industry while very few practice it unknowingly (i.e they do not really understand it) financial, design and physical risk were discovered as some of the most sources of risk in construction projects. Also risk reduction is most popular among the professional Quantity Surveyors as methods and tools for managing and mitigating risks respectively in construction projects. The study concludes that the most sources of risk in construction project delivery often experienced by the Quantity surveyors are financial and design risks. The recommendations suggest that the client should consult competent and qualified professional Quantity Surveyors from the early stage through the completion stage of a construction project. The professional Quantity Surveyors should continue to acquire new skills through training and retraining to meet the changing nature of construction environment.

Keywords: Construction; Project; Quantity Surveyor; Risk management; Risk perception

1. Introduction

Risk management refers to the culture, processes and structure that are directed towards effective management of risks including potential opportunities and threats to construction projects objectives. Although it is widely studied that risk still lacks a clear and sound concepts definition; risk is often only perceived as an unwanted, unfavorable consequences. Such a definition embodied leads to two concepts: firstly, there is an established consensus among professionals that risk needs to be viewed as having both negative and positive consequences. Secondly; risk is not only related to events, i.e single points of action, but also relates to future projects conditions that may turn out to be favorable. This is because future projects conditions are hard to predict in the early stages of the project lifecycle. In addition, condition can change during the project lifecycle and risk is that the conditions are different and potentially more severe than was first estimated.

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There are few industries that face the same severity of risks as construction. A risk is any plausible event that would derail your plans. And accounting for every possible risk in construction projects is very challenging indeed.

If we compare construction to other industries, it quickly becomes clear why risk management is so much more complex for builders. Other sectors also deal with fairly stable or predictable risks. For example, the biggest threats to a manufacturer's projects are supply shortages or labour problems. Meanwhile, agriculture's biggest worries are the weather and pests. But building is, by its nature, much more unpredictable and every project is entirely unique. Construction involves large numbers of independent companies working together and project managers must deal with all the supply, weather and labour issues that other industries face too.

The best way of minimizing risk in construction projects is to be fully prepared for everything that could go wrong. An in-depth study of risk in construction projects identified seven key areas where building projects can be significantly derailed.

We cannot eliminate risk totally but we can manage the risk that we have identified by having a structured approach of risk management. The consequences of a risk when it occur, will affect the cost, quality, time, health and safety and even the business itself. That is why managing the risk is important to reduce the probability of the risk occurring as well as minimizing the impact of the risk especially to the project performance.

These are the activities that could lead to risk in the construction industry are Design risks, External risks, Environmental risks, Organizational risks, Project management risks, Right of way risks, and Construction risks.

The study will showed that design errors and design process delays were the most frequently mentioned risk factors. Every project manager knows that construction work involves high levels of uncertainty. However, when time is tight, conducting an exhaustive risk assessment may not always seem like the best use of resources. Furthermore, the studies highlight the following benefits of analyzing risk in construction projects:

- Helps assess and ascertain project viability,
- Can minimize losses,
- Identifies project risks and quantifies the potential cost of each,
- Determines if you will make an adequate profit on a particular project,
- Keeps insurance premiums at acceptable levels,
- Limits professional indemnity claims and
- Protects company's credibility and reputation.

More research into construction project risk shows that it can be successfully managed using the following four-step process:

- **Risk identification**: Work collaboratively with stakeholders to identify everything that could go wrong with a project.
- **Risk assessment**: Score the risk on a sliding scale to decide how much of an impact it would have on your project if it were to happen. Prioritize the biggest risks.
- **Risk mitigation:** Develop plans to minimize the risks so they are less likely to happen. Then outline protocols defining what would be done should the risk arise.
- **Risk monitoring:** On a regular basis, assess the project and scan the horizon for risks that may occur. Risk management has become an integral process in managing construction projects. Construction project activities are to be well calculated in order for the deliverable to be of great use and benefit to its stakeholders. To complete most construction projects on time, minimizing cost and wastages, proper risk management practice must be employed (Tchankova, 2012). Hence the role of Quantity Surveyors in construction industry cannot be over emphasized.

1.1. Statement of the Problem

Risk in construction has been described as exposure of construction activities to economic loss, due to unforeseen events or foreseeing event for which uncertainty was not properly accommodated whenever a construction project is embarked upon, there are some risk elements inherent in it such as physical risk, environmental risk, logistics risk,

financial risk, legal risk and political risk among others with construction projects becoming increasingly complex and dynamic in their nature as well as the introduction of new procurement method, many contractors have been forced to rethink about their approach to the way that risk are treated within their projects and organizations. This is because the current economic crisis currently witnessed in the country due to falling oil prices and influx of new construction companies into the country due to global economic melt–down and drive of foreign contractors to enter into new markets have increased the competition in the sector.

There are many risks that are being faced by the contractor especially in order to finish a certain project carried out by them. But many contractors do not put much consideration on the risk especially in procurement. Procurement indeed is the most important things that need to be prioritizing in the project starting from the early stage of the construction process. In construction project we always heard about the project is over schedule, project over budget, low quality of project, problems with the tender, problem with the client, problem with the sub-contractor and etc. Generally, there is no construction project without risk and it may affect the project negatively. Besides, the effects of the risk and its management are usually very difficult to predict, so many project cannot be completed in allocated time and these entire project may be abandoned by the contractor. This problem is due to the weak in management, non-systematic risk management, non-systematic organizational management and also not having the right professionals and method to handle the problem that arises. In order to complete in the right time, quality and cost, it is important to make a proper and good management of risk and cooperate among each other. Besides, analyze of risk is also very important and knowing the right method to handle the risk is a must, this is because there is no construction project that neglect risk. Increasing the awareness about the risk in procurement, construction and others is the trend that must be said by the government in order to protect the contractor right in this industry. Consequently, the contractor must take a quick action to prevent this risk at a minimal rate during and handling a particular project. Minimizing the risk can help the contractor in recovery the value of money and learn on how to fully understand what the contract is all about.

Embarking on a construction project involves taking risks, as the Nigerian construction industry is not risk – free. No matter how small or simple the project is, it is still could go wrong as soon as the two parties, the employer and the contractors signed a contract, they have taken on board the risk (Smith, 2013). The individual in the construction industries that undertake various activities are heterogeneous since clients, consultants and contractors have different roles and objectives (Flanagam, 2017). According to Chapman (2011), risk in construction, however cannot be eliminated, but it can be minimized, transferred or retained. However, the industry has a very poor reputation for managing risk, with many projects failing to meet dead lives and cost agents (Mill, 2001). In practice, normally in order to deal with the unexpected event, there will be an allocation of about 10 percent from the estimated cost of the proposed construction project as a contingency sum. Earlier observation shows that the risk management process is not widely being implemented in Nigeria construction industry. For this reason, this research seeks to assess the Quantity Surveyors perception on risk management practice in construction projects delivery.

Aim and Objectives of the Study

The aim of this research is to assess Quantity Surveyors perception on risk management practice in construction projects delivery in Ebonyi State Nigeria.

In order to achieve the purpose of the study, specific objectives for the study are:

- To examine the challenges facing the implementation of risk management practices in construction project delivery.
- To identify the current practice of risk management amongst Quantity Surveyors in the construction industry
- To evaluate the Quantity Surveyors level of awareness and acceptance on risk management practice.
- To know the extent of known risk management practice influences competitive risk management in the construction industry.

2. Literature review

It is helpful to categorized risks associated with project as a guild for the identification process and to facilitate the selection of the most appropriate risk management strategy. As proposed by Merna and Smith (2018), it is useful to separate the more general risk which might influence a project but may be outside the control of the project parties from the risk associated with key project element. Risk can be separated into two main categories which are global risk and elemental risk. Global risk can be divided into four sections which are: political, legal, Commercial and environmental risk.

- **Political Risk:** In consistency in government policy, change in rules and regulation, import restrictions, increase tax rate, imposition of exchange control that limits a subsidiary's ability to remit earning to the parent company, imposition of price control government interfere existing contract.
- **Legal Risk:** liability for acts of others directs liabilities of local law, legal differences between home country and difference of suppliers, contractors and designers.
- **Commercial Risk:** Commercial risks may include the wider aspects of demands and supply, recession and boom, social acceptability and consumer resistance.
- **Environmental Risk:** This include ecological damage, pollution, waste treatment, changes in standards, changes in external pressure and changes in environmental aspects.

The elements risks that those risks associated with elemental risks of the project namely, Implementation risks, and operational risks and for some project there will be a financial risks and revenue risks. The nature of elemental risks is it is more likely to be controllable or manageable by the project team. Professional QS manages all costs relating to building and civil engineering projects, from the initial calculations to the final figures. They seek to minimize the costs of a project and enhance value for money, while still achieving the required standards and quality. But few of these professionals understand the risks to which they are exposed or the standard of skill and care which the law expects. A risk is the probability of incurring misfortune or loss while, a risk factor is a factor such as a habit or an environmental condition that predisposes an individual to develop a particular diseases (Collins English Dictionary and Thesaurus, 2006). Ojo (2010) emphasized that the effect of risk is assessed through the risk factors. Professional Quantity Surveyors who is affected by many risk, accommodate these risks by the inclusion of a contingency allowance at tender stage (Hogg, 2000). Traditionally, during the pre-contract stage of project, most of these risks are not properly identified and assessed for the likelihood of its occurrence and its impact on project performance. Rather a 10% contingency is added to the total project cost in order to accommodate the effect of unforeseen circumstances. In most cases the 10% contingency is bases on intuitive guesswork and this explains the attendant high cost overrun (Odeyinka 2007).

Thus, a need to assess the risk impact on construction project is still desirable. Proper risk analysis and cost control will ensure certainty of project price i.e project will achieve its cost and will be within budgets, timely delivery of project, project will also receive the best quality and the expenditure must give value for the money spent (Awodele 2012). While formalized risk management strategies are available, they are seldom exercised by the Quantity Surveyor (Hogg, 2000). Moreover there is a lack of consistency, in the techniques for assessing and managing risk among professionals within the industry, cited Shang *et.al*, 2005. It had been shown by researchers, for example Akintoye and Fitzgerald (2000), Mak *et al*. (2008) and Macsporran and Tucker (1996), that errors in assessing cost and design variations create irregularities that can extensively affect the overall budget prediction, particularly in countries with developing building industries. Moreover, elements of risk have to be incorporated when forecasting building cost. While the professional building cost consultant insists on having the information to determine the cost, these details are not available when the budget estimates are needed most. In spite of this, professional building cost consultants must attempt to identify the most important risks, to produce a credible building cost budget (Samid, 2016). Meanwhile, budget prediction cannot be improved without an empirical knowledge of risk factors and their sources. It could thus be argued that, awareness of, and subsequent implementation of risk management practices could contribute to the enhanced project performance of the construction industry. Additionally, empirical evidence has shown that some construction organizations don't implement risk assessment; management practices and the techniques as part of managing their projects, often resulted in project costs exceeding budget and behind schedule (Kululanga and Kuotcha, 2010; Kikwasi, 2012). Professional Quantity Surveyors accommodate risk by the inclusion of a contingency allowance at tender stage (Hogg, 2000) while formulized risk management strategies are available, they are seldom exercised by the quantity surveyor (Hogg, 2000). Moreover there is lack of consistency, in the techniques for assessing and managing risk among professionals within the construction industry. It is important that there should be an obligation by the Quantity Surveyor to take lead in identifying the real issues that impact on building cost, and on risk management.

In addition, they must make informed suggestions on how to solve the cost disparity between initial budget estimate and final building cost. The Quantity Surveyors are concerned with the controlling and managing construction project. The Nigerian construction industry is faced with uncertainties with construction targets not being met and high rate of abandoned construction projects, there is a great need for proper risk in construction projects have been recognized as a very important process in order to achieve project objectives in terms of time, cost, quality, safety and environmental sustainability (Mills, 2001). Construction project activities are to be well calculated in order for the deliverable to be of great use and benefit to its stakeholders. The effective implementation of risk assessment and management practices is indispensable to the success of construction projects (Banaitience *et al*., 2011) and the successful management of risks in projects facilitates the achievement of the projects objectives (Zou *et al*., 2006).

The role of the Quantity Surveyors (QS) within the construction environment is of great importance to both clients and other industry professionals (Perera *et al*., 2007). The roles played by the Quantity Surveyor are essential with construction industry. Being in charge of financial matters, carries with great responsibility and the Quantity Surveyors has the expertise to provide independent advice on these matters (Dada and Jagboro, 2012). This advice affect clients decisions on whether to building or not and if the client decides to build, what effect does cost have on other criteria within the clients and users value systems including time and quality, function, satisfactions, comfort and aesthetic. As it is usually the case, even under the traditional procurement system where the Quantity Surveyors is not usually the lead or prime consultant, all other members of the team, including the client relate with him and supply valuable information to the quantity surveyors to enable him prepare accurate estimate to make meaningful contributions towards the successful completion of a project. Regardless of the procurement strategies adopted, the roles of Quantity Surveyors are prominent for a successful completion of projects. Hence, Quantity surveyor role is categorized into three stages which are pre-contract, procurement and post – contract stage. Role of Quantity Surveyor at pre-contract stage include feasibility study cost planning at schematic design stage, cost planning at detailed design stage as well as value engineering inputs to the design teams. Furthermore, at procurement stage, Quantity Surveyors role include preparation of bills of quantities, preparation of tender document, tender selection and appraisal, tender evaluation, negotiation and final award contract agreement not withstanding all these roles, Quantity Surveyors also perform his role at post contract stage, these include interim valuations, charge management, value engineering, contract administration and final account settlement.

3. Methodology

In this research, purposed Judgmental sampling techniques which is non-probability sampling was employed. This is where the researcher selects units to be sampled based on their knowledge and professional judgment. It is a sampling procedure that is characterized by a deliberate effort to obtain representative samples from a study of population. It was considered for this research work due to the heterogeneous nature of the professionals that make up the population of the study.

A population of sixty (60) respondents within Ebonyi South was targeted and to determine the sample size for questionnaire, the Yaro Yamaru formula was adopted.

The formula is given thus:

$$n=\frac{N}{1+N(e)^2}$$

Where:
n = sample size
N = population
e = Error limit (0.05)
i = constant

Applying a population of 60 respondents and error limit of 0.05 as indicated above, we have

Sample size (n) = 60

$$n=\frac{60}{1+60(0.05)^2}$$

$$n=\frac{60}{1+0.15} = 52.17$$

Sample size (n) ≈52

Data collection use was primary and secondary source which questionnaire was administered to the consultants and professional in the construction industry as regard to risk management perceptions among Quantity Surveyors in construction industry. A total of 52 questionnaires were distributed to these respondents which 46 was retrieved at the end. Data collected was analyzed using descriptive statistics tools such as mean index score (MIS), pie chart, bar chart, and percentages**.** They helps to show what the distributions of variables are, they are characterized by simplicity, straight forwardness, utilities and dependability. This method is suitable for this research because the researcher's interest is the distribution of the response from Quantity Surveying professionals as regards risk management in the

construction industry. Conclusion or judgment was based on the group of similar responses with highest ratio or percentages in comparison with other responses.

4. Results

Since the research adopts purposed Judgmental sampling techniques which is non-probability sampling was employed, the research question were reviewed to draw inference on the result and to generate proper conclusion and recommendation. On this hypothesis testing were carried out to review result:

4.1. Testing hypothesis

4.1.1. Hypothesis 1

Null hypothesis (Ho): There is no significance in the mean response of challenges are faced by Quantity Surveyors in the implementation of risk management practices in construction project

(Ho_1): There is no significance in the mean response on current practice of risk management amongst Quantity Surveyors.

4.1.2. Hypothesis 2

Null hypothesis (HO_2): There is no significance in the mean response on Quantity Surveyors perception and acceptance on risk management.

(HO_3): There is no significance in the mean response known risk management practices influence competitive risk management in the construction industry.

4.2. Testing Hypothesis 1

Table 1 Effect of risk Degree of Significance

s/n	Effects of risk	Very significant	Significant	Average significant	Little significant	Not significant	Row significant
1	Time over-run	34	9	3			46
2	Abandonment of construction project	26	14	3	3		46
3	Increase of final cost of project	20	20	6			46
4	Typing down of client capital due to non-completion of the project	14	16	7	9		46
5	Wastage and under utilization	9	14	20	3		46
6	Dispute	9	16	14	7		46
	Total column	112	89	3	22		276

Source: field survey Analysis 2022

Degree of freedom (df) = (R - 1) (C - 1)

= (6 - 1) (5 - 1)

= 5x4

= 20

The hypothesis is tested at 0.05, level of significance is 0.95 confidences. Thus hypothesis is tested using responses from questions shown.

Chi – Square formula =

$$£x^2 = \frac{£\,(o-e)2}{E}$$

Where;
O = observed frequency
e = Expected frequency
£ = Summation e $= \frac{\text{(Row total) (Column total)}}{\text{(Grand total)}}$

$$e_1 = \frac{112 \text{ X } 46}{276} = 18.7$$

$$e_2 = \frac{89 \text{ X } 46}{276} = 14.8$$

$$e_3 \frac{53 \text{ X } 46}{276} = 8.8$$

$$e_4 = \frac{22 \text{ X } 46}{276} = 3.7$$

$$e_5 = \frac{0 \text{ X } 46}{276} = 0$$

$$e_6 = \frac{276 \text{ X } 46}{276} = 4.6$$

Table 2 Level of Significance

Effects of risk	Very significant	Significant	Average significant	Little significant	Row total
1	34 (18.7)	9 (14.8)	3 (8.8)	0 (3.77)	46 (46)
2	26 (18.7)	14 (14.8)	3 (8.8)	3 (3.7)	46 (46)
3	20 (18.7)	20 (14.8)	6 (8.8)	0 (3.7)	46 (46)
4	14 (18.7)	16 (14.8)	7 (8.8)	9 (3.7)	46 (46)
5	9 (18.7)	14 (14.8)	20 (8.8)	3 (3.7)	46 (46)
6	9 (18.7)	16 (14.8)	14 (8.8)	7(3.7)	46 (46)
Column Total	112 (112.2)	89 (88.8)	53 (52.8)	22 (22.2)	46 (46)

$$£x^2 = ((£\,\underline{(o\text{-}e)_2}))/E$$

$$= \frac{(34 - 18.7)^2}{18.7} + \frac{(9 - 14.8)^2}{14.8} + \frac{(3 - 8.8)^2}{8.8} + \frac{(0 - 3.7)^2}{3.7} +$$

$$\frac{(26 - 18.7)^2}{18.7} + \frac{(14 - 14.8)^2}{14.8} + \frac{(3 - 8.8)^2}{8.8} + \frac{(0 - 3.7)^2}{3.7} +$$

$$\frac{(20 - 18.7)^2}{18.7} + \frac{(20 - 14.8)^2}{14.8} + \frac{(6 - 8.8)^2}{8.8} + \frac{(0 - 3.7)^2}{3.7} +$$

$$\frac{(14 - 18.7)^2}{} + \frac{(16 - 14.8)^2}{} + \frac{(7 - 8.8)^2}{} + \frac{(9 - 3.7)^2}{} +$$

$$\frac{(9-18.7)^2}{18.7} + \frac{(14-14.8)^2}{14.8} + \frac{(20-8.8)^2}{8.8} + \frac{(3-3.7)^2}{3.7} +$$

$$\frac{(9-18.7)^2}{18.7} + \frac{(16-14.8)^2}{14.8} + \frac{(14-8.8)^2}{8.8} + \frac{(7-3.7)^2}{3.7} +$$

= 12.52 + 2.27 + 3.82 + 3.70 + 2.84 + 0.04 + 3.82 + 0.13 + 0.09 + 1.82 + 0.89 + 3.70 + 1.18 + 0.10 +0.37 + 7.59 + 5.03 + 0.04 + 14.25 + 0.13 + 5.03 + 0.08 +3.07 + 2.90 = 75.41

4.3. Hypothesis 2

Table 3 Challenges facing the implementation of risk management practice

S/N	Challenges	Very significant	significant	Average significant	Little significant	No significant	Row total
1	Poor government policies	14	29	3			46
2	Poor enforcement of policies from government agencies	16	20	10			46
3	Lack of technical know how to manage risk by the consultant	20	14	9	3		46
4	Little/no understanding of risk management	20	13	7	6	46	
5	Weak institution	7	25	14			46
6	High cost involved in risk management	7	23	16			46
7	Poor/lack of co-operation among the consultants	7	21	9	9		46
8	Little or no monitoring of members by the professional bodies		27	9	9		46
9	Poor communication among the consultants	3	14	19	7	3	46
	Column Total	94	186	94	34	6	414

Source: Authors field survey Analysis 2022

Degree of freedom (df) = (9 - 1) (5 - 1)

8 x 4 = 32

$$EX2 = \frac{E\,(o-e)2}{e}$$

$$\text{expected (e)} = \frac{(\text{Row total})\ (\text{Column total})}{Grand\ Total}$$

$$e1 = \frac{94 \text{ x } 46)}{414} + 414$$

$$e2 = \frac{186 \text{ x } 46}{414} = 20.7$$

$$e3 = \frac{94 \times 46}{414} = 10.4$$

$$e4 = \frac{34 \times 46}{414} = 3.8$$

$$e5 = \frac{6 \times 46}{414} = 0.7$$

Table 4 Level of Significance

Response question	Very significant	significant	Average significant	Little significant	Not significant	Row total
1	14 (10.4)	29 (20.7)	3 (10.4)	0 (3.8)	0 (0.7)	(46) 46
2	16 (10.4)	20 (20.7)	10 (10.4)	0 (3.8)	0 (0.7)	46) 46
3	20 (10.4)	14 (20.7)	9 (10.4)	3 (3.8)	0 (0.7)	46) 46
4	20 (10.4)	13 (20.7)	7 (10.4)	6 (3.8)	0 (0.7)	46) 46
5	7 (10.4)	25 (20.7)	14 (10.4)	0 (3.8)	0 (0.7)	46) 46
6	7 (10.4)	23 (20.7)	16 (10.4)	0 (3.8)	0 (0.7)	46) 46
7	7 (10.4)	24 (20.7)	9 (10.4)	9 (3.8)	0 (0.7)	46) 46
8	(10.4)	27 (20.7)	7 (10.4)	9 (3.8)	3 (0.7)	46 (46)
9	3 (10.4)	14 (20.7)	19 (10.4)	7 (3.8)	3 (0.7)	46 (46)
Column total	94 (93.6)	186 (186.3)	94 (93.6)	34 (34.2)	6 (6.3)	414 (414)

$$EX2 = E\,(O - e)2$$

$$= \frac{(14 - 10.4)2}{10.4} + \frac{(29 - 20.7)2}{20.7} + \frac{(3 - 10.4)2}{10.4} + \frac{(0 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(16 - 10.4)2}{10.4} + \frac{(20 - 20.7)2}{20.7} + \frac{(10 - 10.4)2}{10.4} + \frac{(0 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(20 - 10.4)2}{10.4} + \frac{(14 - 20.7)2}{20.7} + \frac{(9 - 10.4)2}{10.4} + \frac{(3 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(20 - 10.4)2}{10.4} + \frac{(13 - 20.7)2}{20.7} + \frac{(7 - 10.4)2}{10.4} + \frac{(6 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(7 - 10.4)2}{10.4} + \frac{(25 - 20.7)2}{20.7} + \frac{(14 - 10.4)2}{10.4} + \frac{(0 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(7 - 10.4)2}{10.4} + \frac{(23 - 20.7)2}{20.7} + \frac{(16 - 10.4)2}{10.4} + \frac{(0 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(7 - 10.4)2}{10.4} + \frac{(21 - 20.7)2}{20.7} + \frac{(9 - 10.4)2}{10.4} + \frac{(9 - 3.8)2}{3.8} + \frac{(0 - 0.7)2}{0.7}$$

$$= \frac{(0 - 10.4)2}{10.4} + \frac{(27 - 20.7)2}{20.7} + \frac{(7 - 10.4)2}{10.4} + \frac{(9 - 3.8)2}{3.8} + \frac{(3 - 0.7)2}{0.7}$$

$$= \frac{(3 - 10.4)2}{10.4} + \frac{(14 - 20.7)2}{20.7} + \frac{(19 - 10.4)2}{10.4} + \frac{(7 - 3.8)2}{3.8} + \frac{(3 - 0.7)2}{0.7}$$

10.4 20.7 10.4 3.8 0.7

= 1.25 + 3.33 + 5.27 + 3.8 + 0.7 + 3.01 + 0.02 + 0.02 + 3.8 + 0.7 + 8. 86 + 2.17 + 0.19 + 0.16 + 0.7 + 8.86 + 2.86 + 1.11 + 1.27 + 0.7 + 1.11 + 0.89 + 1.25 + 3.8 + 0.7 + 1.11 + 0.26 + 3.02 + 3.8 + 0.7 + 1.11 + 0 + 0.19 + 7.12 + 0.7 + 10.4 + 1.92 + 1.11 + 0.19 + 0.7 + 5.27 + 2.17 + 7.11 + 2.69 + 0.51 = 106.61

5. Decision

The calculated Chi – Square statistic (X2 = 106.61) the predetermined alpha level of significance (0.05) and the degree of freedom (df = 32. Ending the chi-square distribution table with 32 degree of freedom and reading along the row 1 find out that the value of X2 (106.61) far exceed the critical table value of (43.77) at 0.05 level of significance. The corresponding probability is 0.05< p> 0.005 since is less than the conventional accepted significance level of 0.05 0r 5%, so the null hypothesis, "There are no challenges facing the implementation of risk management in construction project" is rejected while the alternative hypothesis, "There are challenges facing the implementation of risk management in construction project is accepted.

In this effect it has been proven that there are challenges facing the implementation of risk management practice in construction project.

6. Conclusion

The study investigated the risk management perception among Quantity surveyors in construction industry with a view to evaluate the project consultant's level of awareness and acceptance on risk management perception. Furthermore, the study was carried out to examine the barriers and challenges to the implementation or risk management in construction project. To identify the current practice of risk management, Quantity surveyors in the construction industry was also an integral part of the study having investigated the sources of risk in construction projects and ways for managing and mitigating these risks.

The result of the study was based on the analysis of data and the following conclusions were drawn;

- Most of the Quantity surveyors are aware and accept risk management perception in Nigeria construction industry.
- The Quantity surveyors agreed that awareness and acceptance of risk management perception and Quantity surveyors in attaining construction project objectives.
- Very few of the Quantity surveyors who practice risk management in the course of their consultancy delivery do it unknowingly (i.e. they don't fully understand risk management)
- Incomplete or inaccurate cost estimate, low management competency of sub contraction, and pure inflation of construction materials are the factors that most affect project delivery in Nigeria as experienced during construction project.
- The most sources of risk in construction project delivery often experienced by the Quantity surveyors are financial and design risks.
- Risk reduction, Retention, Transfer and Avoidance are the most current method use by the Quantity surveyors in managing risk.
- Time over run, abandonment of construction project and increase in final cost of project will usually occur as a result of risk effects on construction project.
- In mitigating risk in construction project, insurance bond cover and contingency sum are most applied by the Quantity surveyors.
- Barriers and challenges hinder the Quantity surveyors from achieving project objective, poor government policies and poor enforcement of policies from government agencies were seen as a major problem to this regard.
- Risk in construction project cannot be totally eliminated but can be reduced, retained and transferred by the Quantity surveyors.

Recommendations

Based on the conclusion drawn, the following are recommended as effective ways of managing and mitigating risk in Nigeria construction Industry by Quantity surveyors.

- The client should ensure that competent Quantity surveyors (where better project managers) are consulted at the early stage of the project who in turn should make sure that accurate and complete cost estimate is prepared for the project.
- The Quantity surveyors should do everything possible to see that jobs are not sub contracted to those who are incompetent in executing projects.
- The designers should make sure that all project working drawings needed by Quantity surveyors and contractor are available and well annotated before contracts are awarded and avoid hiding under the variation clause of the JCT form of contracts. As a result not completing the designs as at when due or issuance of variation order being witnessed during the construction stage as a result of incomplete designs.
- Quantity surveyors should as a matter of urgency diversify the method use in managing risk; they shouldn't stick to one or two methods.
- Training and retraining of the Quantity surveyors will go a long way in mitigating risk as the industry keep on changing as the day go by.
- If possible, risk management as a separate course should be introduced in our universities and polytechnics to enable the fresh Quantity surveyors understands risk management earlier in the industry.
- Government should have a review of their policies related to construction industry as the existing is not favorable.

Compliance with ethical standards

Acknowledgments

We hereby Acknowledged that all corrections as required has been effected.

Disclosure of conflict of interest

No conflict of interest

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