

INFLUENCE OF PREDOMINANT RISK FACTORS ON OPERATIONAL BUILDING PROJECT PERFORMANCE IN THE SELECTED FEDERAL UNIVERSITIES IN SOUTH EAST NIGERIA.

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Abstract: The study focused on the influence of predominant risk factors on operational building project performance in the selected Federal Universities in South East Nigeria. The broad objective is aimed at examining the influence of predominant risk factors on operational building project performance in the selected Federal Universities in South East Nigeria. The specific objectives are to identify the risk management challenges that affect the operational performance in the selected federal university building projects in Enugu, Anambra and Imo state; to determine the impact of risk management practice in the selected federal university building projects. The study adopted descriptive survey and ex-post facto research design. The population under this study comprises of 102 registered construction professionals working in the physical planning unit under the study area. They are the people who were actively involved in the planning and management of construction projects within the university premises. The study also built multiple regression model and make use of statistical procedures in estimating the relationship between the choice variables. The variables under study are building project performance as the dependent variable whereas risk identification, risk assessment, risk response and control are the independent variables and test using ordinary least square techniques. The findings of the study reveal the identified predominant risk factors that influence building construction project performance in Nigeria are the lack of consistency between bill of quantity drawing and specifications, environmental risk factors, financial risk factor, legal risk factor and several others. the result of the study concludes also that risk management practice has a positive relationship on the building project performance. The study recommends that the relationship as indicated in the result that risk management has a positive and significant impact on the building project performance which implies that an increase in the risk management practice will lead to a significant increase in the building project performance. Hence, there is need to improve the risk management strategies already in place so as to improve the performance of building construction project in the South Eastern Nigeria.

Keywords: Risk Management Practice, Operational Performance, Management Challenges, Institutional Buildings.

INTRODUCTION

The construction industry is one of the largest employers of labor in the world. The recent global economic meltdown poses a major challenge to the building construction industry globally. The success of construction projects, among other things, depends on how well the risks that are associated with them are managed (Zayed, 2018). Risk management is a comprehensive and systematic way of planning, identifying, analyzing and responding to risks to achieve the project objectives (Banaitiene and Banaitis, 2022). Buildings have been considered as one of the most valuable assets of a nation to provide people with shelter and facilities for work and leisure (Lam, Chan and Chan, 2020). Risk management is an integral part of project management (Osipova and Eriksson, 2023), and to buttress this view, risk management has been given prominence in one of the nine Knowledge Areas of project management. It can also say to be a planned form of identifying, evaluating, selecting, establishing and applying options for the handling of the risk (Kremljak, 2014). It helps the key project participants - client, contractor or developer, consultant, and supplier - to meet their commitments and minimize negative impacts on construction project performance in relation to cost, time and quality objectives (Banaitiene, Banaitis and Norkus, 2021).

In Nigeria, the size of the Nigerian construction industry is estimated to be about £2.1 billion (0.2%) which is very small compared to the global construction industry which is estimated to be about £2.6 trillion (Dantata, 2018). In 2012, the Nigerian building construction sector accounted for 1.33% GDP and this is below the world average benchmark for 9% of GDP (FMI, 2012). This result leaves a huge room for growth in the construction of buildings across all sectors of the economy in Nigeria. However, both small and large-scale construction projects are typically associated with enormous budget over prolonged time-frame and they usually consist of various risk events, such as natural disasters, technical difficulties, insufficient information and political issues (Fan, Linand Sheu (2018). (Okigbo, 2022) also pointed out that there is a lack of adequate informational data on Nigerian construction projects. Many instances of poor construction project performance in developing countries compared to developed countries occur as a result of lack of understanding and application of risk management.

Moreover, Nigerian construction industry is branded with time and cost overruns and this often resulted in outright abandonment of projects Sonuga, Aliboh, and Oloke, 2022. (;Odusami, Iyagba, and Omirin, 2023). In fact, Sonuga (2022) cited Nigeria as a perfect example of a developing country with a large number of abandoned projects. Odeyinka and Yusif (2017) further confirmed that 70% of project surveyed in Nigeria suffered from time overrun in their execution. One of the major reasons for such failures outlined above can be attributed to lack of understanding and effective application of risk management practice (Abdelgawad and Fayek, 2020). More construction companies are becoming aware of the risk management practices which are vital to improve the management of building construction projects. The construction industry operates in a very uncertain environment where conditions can change due to the complexity of each project. Risk management is not a tool which ensures success but rather a tool which helps to increase the probability of achieving success. Previous studies (Klemetti, 2016; Lyons and Skitmore, 2022) have been conducted within the field of risk management but each presents a different approach to this concept. The concept of risk management is presented in a systematized project life cycle (PLC) approach to show differences between elements of risk management practice in different project phases.

Moreover, Shofoluwe and Bogale (2020) ascertained that, building project entails risks and uncertainties, irrespective of size, but then the relation is such that the risk associated to a project is directly proportional to the

size and complexity of the project. Given the project complexity and changing situations of building projects, the sector is susceptible to risk in which a climate of great risk and uncertainty is created. The precipitating risk factors to the construction industry abound including various technical, socio-political and commercial risks. Historically these risks have proven to be detrimental to the growth of building construction sector. Project management uses skills, tools and techniques to accomplish project objectives aimed at meeting the expectation of stakeholders. Risk management is an important part of the process to identify potential project risks and respond to such risks. It takes into consideration processes geared towards maximizing the effect of positive events while minimizing the influence of negative events (PMI, 2013). The ten knowledge areas as listed and described by the Project Management Institute (PMI, 2013) among others also include Risk Management. It is widely conceived that there is a choice in finding risk in a particular environment and cannot be reduced to mere fate and that the fulfillment of project and company business goals can be affected by the innate uncertainties in the system.

1.2 Statement of the Problem

Poor/under performance of building projects can be attributed to lack of communication and application of risk management practice. The Nigerian construction industry is branded with time and cost overruns and this often resulted in outright abandonment of projects (Sonuga, 2022).

Poor quality work, lack of specific supervision and improper schedule of work in project delivery often leads to negative consequences of the unforeseen event which is usually called threat. Failure to achieve specific results can cause unexpected negative effects on building construction projects and thereby, has an appalling effect on the construction sector in particular to the national economy as a whole (Olusegun and Micheal, 2021).

Odeyinka and Yusif (2017) further confirmed that 70% of project surveyed in Nigeria suffered from time overrun in their execution. One of the major reasons for such failures outlined above can be attributed to lack of understanding and effective application of risk management practice (Choudhry and Iqbal, 2022). These setbacks are often responsible for turning profitable projects into losing ventures (Sweis, Abu and Shboul, 2018).

To address these challenges, risk management has become an important part of the decision-making process in construction industry - as it determines the success or failure of construction projects (Abujnahet, 2020). Good decisions are made against a predetermined set of objectives based on knowledge, data, and information; whereas decisions that are made without a logical assessment of project-specific criteria may lead to difficulties in project delivery (Abujnahet, 2020). Risk sometimes cannot be eliminated, but can be minimized, transferred or retained (Smith, Merna, and Jobling, 2016). However, failure in managing risk may not be peculiar to Nigeria alone, but may be reasonably justified for most developing countries.

1.4 Objectives of the study

The specific objectives are:

1. To assess predominant risk factors that influence operational performance in the selected federal university building projects Enugu, Anambra and Imo state.
2. To determine if significant relationship exists between risk management practice and operational building project performance in the selected federal institutions in Enugu, Anambra and Imo state.

1.5 Research Questions

The study will be guided by the following research questions:

1. What are the predominant risk factors that influence operational performance in selected university building projects in Enugu, Anambra and Imo state?

2. What is the relationship between the risk management practice and operational performance in the selected federal university building project in Enugu, Anambra and Imo state?

1.6 Research Hypotheses

The following null hypotheses will guide the study:

1. **Ho:** Risk management practice has no significant impact on the cost of building construction project in South Eastern Nigeria.
2. **Ho:** Risk management practice has no significant impact on the quality of building project in South Eastern Nigeria.
3. **Ho:** Risk management practice has no significant impact on the time of building construction project in South Eastern Nigeria.

Literature Review

Concept of Risk Management

According to the International Organization for Standardization, risk can be defined as a combination of the probability of an event and its consequences. Risk is thus the probability that an accidental phenomenon produces the effects of a given potential gravity, during one given period. Therefore, a potentially dangerous event, the hazard, is not transformed into risk only if it applies to a zone where human, economic or environmental stakes are in presence and this zone has a certain degree of vulnerability. Similarly, Al-Bahar (2020) opined that risk is the exposure to the chance of occurrences of events adversely or favorably affecting project objectives as a consequence of uncertainty. According to Oxford Advanced Learner's Dictionary (2015), it defined risk as the 'chance of failure or the possibility of meeting danger or of suffering harm or loss. Risk has come to represent a combination of probability and something adverse or dangerous, phenomena that were previously referred to as hazards, dangers, or uncertainties are now labeled as risks. Although risk touches every aspect of human welfare, the dimension of risk has been conceptualized in different fields. Risk is defined as a combination of probability of an event occurring and its consequences for project objectives (international standard IEC62198:2001). Risk has not been examined as a concept in some literature or research, but using the evolutionary method of concept analysis, risk is examined as a concept. This analysis was undertaken to define and clarify the concept and dimensions of risk as they relate to risk for disease (Hoeve and Schweizer, 2001). Similarly, risk is an unwanted event which may or may not occur; the cause of an unwanted event which may or may not occur; the probability of an unwanted event which may or may not occur; the statistical expectation value of unwanted events which may or may not occur; the fact that a decision is made under conditions of known probabilities.

Risk Management Practice on Building Project Performance

Risk management is directly associated with performance of construction projects. Aarthipriya, Chitra and Poomozhi (2020) showed that there is existence of impact between risk identification and risk assessment on the project success, planned budget, schedule time, and complying with technical specifications. Another study by Lawrence (2015) indicates a strong connection between risk management and project performance in construction industry. He found that risk management practices at planning stage had an effect on project performance. The research project indicated that most projects had some input from a qualified engineer and architect. However, most respondents had not studied risk management. Adeleke, Bahaudin, Kamaruddeen, Bamgbade, Salimon, Khan and Sorooshian (2018) have investigated the impact of risk management on project performance. The objective of their study is to measure the degree of diffusion of risk management practice in Brazilian companies.

The results demonstrate that adopting risk management practices has a significant positive impact on project performance. They also show a positive impact from the presence of a risk manager on project success.

The review of previous studies revealed a strong association between risk management and performance of construction projects. A statement that “a higher risk may lead to a higher gain” (Al-Ajmi&Makinde, 2018). Minimizing the risks in a project will reduce the challenges and improve the output of the project. Risks have a significant impact on a construction project’s performance in terms of cost, time and quality Chang, Hwang, Deng and Zhao (2018). As the size and complexity of the projects have increased, an ability to manage risks throughout the construction process has become a central element preventing unwanted consequences. Moreover, risk management recognized as an important exercise in order to achieve better performance of construction projects. Success in construction project indicated by its performance in the achievement of project time, cost, quality, safety and environmental sustainability objectives. It is recommended that more attention be placed on organizing risk management according to their effect and influence and more emphasis should be put on communication and project risk management by developing plans for effective communication and risk handling when carrying out projects (Cross, 2019).

In the same context, Hartono, Wijaya and Arini (2019) examined the impact of project risk management on CPP. The results of their study showed that adopting Project Risk Management Practices has a significant positive impact on project success. They also show a positive impact from the presence of a risk manager on project success. From the practical point of view, paying attention to uncertainties during the project, making use of the project risk management techniques and deeply understand the business environment are critical success factors, demanding attention of project managers and risk managers.

2.1.11: Benefits of an Effective Risk Management practice

According to Meulbroek (2021) an effective risk management system should potentially benefit the organization or firm in a number of ways. These have been divided into internal and external benefits. The most obvious of the internal benefits are the ability to gain a much better understanding of the risks that are potentially facing a development organization and its activities and viewing risks as opportunities rather than solely as threats. Risk management therefore shall support a sound decision-making, balancing risks and rewards (Gehner, 2018 and Pezier, 2022). Risk management provides valuable information for strategic planning and decision-making by the organizations or firms and facilitates a sound identification and assessment of risks. As a result of this, decision-makers in the development industry are expected to make better decisions with respect to strategic and operational choices. An organization may pursue opportunities with greater confidence knowing that it understands the risks inherent in its development activities. At senior management and board level both accountability for and confidence in managing risks are increased, thereby enhancing corporate governance through oversight structure and systematically aligning risk management activities with business strategies.

Formalized risk management procedures and documentation result in the identification of opportunities to share knowledge and best practice. It acts as an appropriate working tool, creating transparency and confidence in the organization’s business processes. The external benefits include the capital raising, insurance and meeting regulatory requirements. Formalized risk management processes are important when raising capital from banks and other capital partners or in demonstrating the credit worthiness to the public, in connection with the handling of risk. With regard to buying insurance solutions, the organization benefits from the possibility of risk-adjusted insurance premiums with corresponding surplus sharing if there is evidence of a well-developed risk management culture within the organization. A documented risk management system facilitates the documentation of

compliance with statutory requirements in the areas of product liability, occupational safety and data protection, Thus, effective risk management supports increasingly demanding investors and regulator's requirements (Gebner, 2018). Risk management and internal controls are means by which businesses' opportunities are maximized and potential and material losses are reduced. Risk management helps organizations or firms to sets strategic and operational objectives that threaten their objectives, Internal control is put in place to help manage risks and increase shareholders' value. Risks can be managed by transferring them to third parties such as an insurance company.

The benefits from Risk Management are not only reserved for the project itself but also for the actors involved. The main incentives are clear understanding and awareness of potential risks in the project. Therefore, risk management contributes to a better view of possible consequences resulting from unmanaged risks and how to avoid them (Thomas, 2019). Another benefit of risk management is increased level of control over the whole development stages and more efficient problem-solving processes which can be supported on a more genuine basis. It results from an analysis of project conditions already in the beginning of the project. (Perry, 2016) The risk management also provides a procedure which can reduce possible and sudden surprises (Cooper, Grey and Walker, 2015). Different attitudes towards risk can be explained as cultural differences between organizations, where the approach depends on the company's policy and their internal procedures (Webb, 2013).

2.1.10: Problems Encountered in Risk Management practice

According to Collier and Burkey (2017) risk assessment is performed non-systematically and instinctively and the risk management plan is not prepared at all in many cases. However, problems are solved once they arise, usually rather too late. The notion of risk as an event having a potential negative impact on business objectives, an integrated risk management system 'is to assess positive outcomes as well. In view of risks exposed to business goals, organizations develop and implement systems of internal controls, which act as preventive measures. It is therefore important to assess whether internal controls that are put in place and the related risks are adequately linked. Collier, Berry and Burkey (2017) observed that companies are facing lot of challenges when it comes to risk management and the implementation of internal control systems, Among the problems are lack of technical knowledge; the process of risk management lacks a clear definition and has a low level of formalization, managers and individual units of the organization have different understanding of risks and their assessment criteria, high cost of information and high costs attributed to internal controls exceed the impact of a respective risk, processes of achieving compliance with external requirements (namely, those set by supervisory bodies, a controlling company, etcetera) are expensive and sometimes ineffective (Collier, 2017).

According to Darnall and Preston (2020) the level of risk is always related to the project complexity, there are so many risks which can be identified in the construction industry which can be explained by the projects size and their complexity. The bigger the project is, the larger die number of potential risks that may be faced. Several factors can stimulate risk occurrence such as financial factors, environmental factors (the project's surrounding, location and overall regulations), time, design and quality. Other influences on the occurrence of risk are the level of technology used and the organization's risks (Gould and Joyce, 2022). Cleden (2019) opines that complexity is a factor that can limit a project; the bigger and more complex a project is, the more resources are required to complete it. Moreover, when all potential risks have been identified, the project team must remember that there might be more threats. Therefore, the project team should not solely focus on management of those identified risks but also be alert for any new potential risks which might arise. RM should be used as a tool to discover the

majority of risks and a project manager should be also prepared for managing uncertainties not included in risk management plan (Cleden, 2019).

Risk Management is a value-adding process, though certain limitations do exist. Inherent limitations such as faulty judgment, the determination of the cost-benefit analysis between risk and control, errors, circumvention of controls and control overriding preclude management from absolute certainty in the achievement of the organization's objectives. According to the study the complex nature of risk management requires expertise that is best utilized if placed in one organizational unit that is responsible for supervising the process, which will ensure continuity of risk management actions, as well as consistency in application. In practice, this is difficult to implement as specialized knowledge, skills and experience are required for such a unit, as well as a more active organizational role that goes beyond traditional consultation activities, which may be in contrast to the current organizational culture (Schroder, 2016), opined that the corresponding measure of risk of a portfolio is the amount of cash needed to sell the risk involved in the portfolio to the market.

Theoretical Literature

2.2.2 Lean Construction theory

Production theory has developed into what is now the Transformation-Flow-Value (TFV) theory. This is a theory that draws on the management literature and history as its base, and these origins are covered in Koskela (2020), where the roots of LC in production theory are explored. Koskela argue that: What is needed is a production theory and related tools that fully integrate the transformation, flow and value concepts. As a first step toward such integration, we can conceptualize production simultaneously from these three points of view however, the ultimate goal should be to create a unified conception of production instead, (Koskela, Howell, Ballard and Tommelein. (2012). The TFV theory combines three points of view and is built on the insight that there are 'three fundamental phenomena in production that should be managed simultaneously'.

The ideas of LC started with site operations but have been progressively applied to the supply chain, design and cost management and project delivery. These elements are brought together in the LPDS (Lean Project Delivery System). The LPDS is detailed by Koskela et. al. (2012), and the LC tools and techniques by Ballard, Tommelein, Koskela, Howell, (2012). For the construction industry, the ideas and methods of LC in particular offer an alternative to management theories. There are three reasons, apart from the usefulness of conceptualizing production processes in a discipline traditionally preoccupied with practical matters. First, LC was, prior to Radosavljevic et al (2012), the only theory of production to have been developed specifically for the construction industry, as discussed above in this paper. Therefore, it provides insights into the range of processes that are involved, based on theory, that lead to propositions that can be tested by application to building and construction projects. The many case studies that have been published at the LC conferences over the years are all tests of the theory and practice of LC. These tests now add to a substantial body of evidence for the effectiveness of LC in a wide range of settings.

Secondly, the Lean Project Delivery System (Ballard et. al. 2012) is an integrated approach to managing all the participants and stages of a project, from initiation to operation. Other approaches, such as value management, design management and indeed project management, only cover certain stages or a specific stage in the progress from conception to operation of a building. The LPDS is a framework starting from the project life-cycle, not adding bits on to achieve a comprehensive looking project plan.

Empirical Studies

Agwu (2022) conducted a study on the effects of risk assessment on organizational performance in selected construction companies in Nigeria. The objective of the research was to ascertain the extent of compliance and influence on organizational performance of risk assessment in the six selected construction companies in Nigeria. The research question addressed the extent of compliance and influence of risk. The finding revealed that there is significant effect of risk assessment on organizational performance. The research concluded that compliance with risk assessment at the organizational level in construction companies in Nigeria will improve organizational performance (reduced accident/ incident rate, improved safety practices, enhanced productivity and increased profitability). According to the study employees' commitment to risk assessment, competitive safety intelligence, high-level safety knowledge flow management were means of sustaining safety best practices in the Nigerian construction industry.

Edu (2022), conducted a study on influence of risk management strategies on value creation. The purpose of the study was to determine the best risk management strategy. Exploratory research design was adopted for the study. Population of the study was 241 and sample of 150 was obtained using Taro Yamane formula. CPM was used to ascertain the best risk management strategy to be used in manufacturing firms. The result revealed that risk transfer is high score risk, followed by risk retention and the least was risk avoidance. The study went further to opined that firms should blend their risk management strategy to get the best out of their investment.

Olajide, (2023) conducted a study on risk management and risk management failure: lessons for business enterprises. The purpose of the study was the importance of effective risk management (ERM) in preventing risk management failure. Risk management failure prevents firms' from meeting their expectations; thus, results to repeated business and project failures. The finding revealed that effective risk identification and assessment will minimize risk management failure and promote firms in meeting their future expectation. The study concluded that risk management failures can be categorized into two: operational failure and operators' failure. The implication for practice suggests that risk management is an integral part of the decision-making process and ERM can improve business performance, thereby minimizing possibilities of business failures in Nigeria. The study believed that there should be proper risk identification and risk assessment in order to reduce business and project failure, according to the study there is need for employees training and retraining program so as to reduce operational failure.

Ali, Abu and John (2022), conducted a study on the effect of risk identification on corporate value. The objective of the study was to determine the relationship between risk identification and profitability, to ascertain the effect of risk identification on firms' value. The result indicated that there is a positive relationship between risk identification and probability. Risk identification significantly affects corporate value. The researcher concluded that risk identification is bedrock for risk management effectiveness.

Nnadi, Enebe and Ugwu (2018) Studied on Evaluating the Awareness Level of Risk Management amongst Construction Stakeholders in Nigeria. The study aimed at creating an increase level of risk management awareness amongst construction stakeholders in Nigeria to enhance strong, vibrant and profitable industry. In doing this they used Descriptive cross-sectional survey design and stratified random sampling to select stakeholders. Structured questionnaire and telephone interviews were adopted for data collection. Reliability of the instrument was established by applying split-half method after duly validation by experts in the field. Cross tabulation and chi-square were adopted to test the data, while the test to find out the strength of association between the variables was carried out using Phi and Cramer's V. Results of the study show that the level of risk management awareness among stakeholders to be relatively low at 57.25% when compares to the colossal damages cause by risks in the

industry. The finding collaborates previous work by [1] that all parties to a project Should have a comprehensive understanding of the risks involved, and risk management procedures should be implemented throughout all the stages of a construction project. It also agrees with [2] work that surmised that risk may arise from that lack of knowledge; as risks are gaps in knowledge which we think constitute a threat to the project.

Research Design

Research design refers to the general strategy that the study uses to organize other components of the research (Creswell, 2014). This study focuses on the application of risk management practice as a strategy for improving organizational performance in selected federal University building projects in south eastern Nigeria. The study adopted descriptive survey and ex-post facto research design. Considering the nature of the research questions and hypotheses of this study, the set of data needed for this study is both quantitative and qualitative in nature.

4.4: Population of the Study

Population refers to all individuals that form part of the group that the researcher intends to study (Cooper & Schindler, 2013). It is the entire group or set of cases that a researcher is interested in generalizing. The population under this study comprises of 102 registered construction professionals working in the physical planning unit under the study area. They are the people who were actively involved in the planning and management of construction projects within the university premises; hence, they are likely to provide the information needed to answer the research questions towards risk management practices in construction projects. They include Quantity Surveyors, Architects, Engineers, Builders, Town planners and Estate surveyors.

Table 4.1 Below Shows the Breakdown of the Population from Different Universities

Table 4.1.1. Breakdown of the Study Population from Nnamdi Azikiwe University Awka

SN	Professional Bodies From Physical Planning Unit	Number of Professionals
1	Quantity Surveyors	3
2	Architects	8
3	Civil Engineers	13
4	Mechanical Engineers	4
5	Electrical Engineers	7
6	Estate Surveyors	5
7	Town Planners	1
	TOTAL	41

Source: Field survey, 2023

Table 4.1.2. Breakdown of the Study Population from University of Nigeria

SN	Professional Bodies From Physical Planning Unit	Number of Professionals
1	Quantity Surveyors	5
2	Architects	8
3	Civil Engineers	8
4	Builders	2
5	Mechanical Engineers	5
6	Electrical Engineers	5
7	Computer Engineers	2

8	Town Planners	2
	TOTAL	37

Source: Field survey, 2023

Table 4.1.3. Breakdown of the Study Population from Federal University of Technology Owerri

SN	Professional Bodies From Physical Planning Unit	Number of Professionals
1	Quantity Surveyors	5
2	Architects	4
3	Civil Engineers	6
4	Mechanical Engineers	3
5	Electrical Engineers	3
6	Estate Surveyors	1
7	Town Planners	2
	TOTAL	24

Source: Field survey, 2023

Table 4.1.4. Total Population from the selected Federal Universities

SN	Professional Bodies From Physical Planning Unit	Number of Professionals
1	Quantity Surveyors	13
2	Architects	20
3	Civil Engineers	27
4	Builders	2
5	Mechanical Engineers	12
6	Electrical Engineers	15
7	Computer Engineers	2
8	Town Planners	5
9	Estate Surveyors	6
	TOTAL	102

Source: Field survey, 2023

4.9 MODEL SPECIFICATION

This study shall build a multiple regression model and make use of statistical procedure in estimating the relationship between my economic variables.

The functional form of the model is specified as follows.

$$BPP = f(RI, RA, RP, CT) \quad (3.1)$$

The statistical form of the model is as follows

$$BPP = \beta_0 + \beta_1 RI + \beta_2 RA + \beta_3 RP + \beta_4 CT + \mu \quad (3.2)$$

Where;

BPP= Building project performance (Dependent variable)

F= functional relationship

RI = Risk Identification

RA = Risk Assessment

RP = Response

CT = Control

β_0 = Constant term

$\beta_1 - \beta_4$ = Slope coefficients

μ = unpredictable random variable/error term

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

Analyses of the Base Data

Data on questionnaire response as well as socio-economic characteristic of respondents were presented in this section.

Population Distribution of Questionnaire and Percentage Response

Table 5.1 Distribution and Response to the Questionnaire

Respondent	Population	Sample Size	Questionnaire distributed	Questionnaire Returned	Questionnaire not returned	Percentage of Questionnaire Returned
Construction professionals	103	103	103	94	9	91.26%

The above table shows that a total of 103 copies of questionnaire were administered. A total of 94 were completely field and returned while 9 questionnaires were not returned.

Population Distribution of Questionnaire and Percentage Response.

5.1.3 ANALYSES OF THE SECOND OBJECTIVE

Table 5.10: *To assess the predominant risk factors that influence organizational performance in the selected federal institutional building projects Enugu, Anambra and Imo state..*

S/No	Item: the predominant risk factors that influence building construction projects performance in Nigeria.	SA	A	UD	D	SD	$\sum FX$	INDE X	RANK
1	Lack of consistency between bill of quantities, drawings and specifications	61 305	21 84	0 0	6 12	6 6	94 407	4.33	3 rd
2	Environmental risk factor	60 300	20 80	3 9	8 16	3 3	94 408	4.34	2 nd
3	Financial risk factor	59 295	22 88	4 12	5 10	4 4	94 409	4.35	1 st
4	Legal risk factor	55 275	25 100	0 0	8 16	6 6	94 397	4.22	5 th
5	Construction risk factor	53 265	28 112	1 3	10 20	2 2	94 400	4.26	4 th
6	Political risk factor	49 245	22 88	5 15	12 24	6 6	94 378	4.02	9 th

7	Management risk factor	40 200	30 120	0 0	7 14	17 17	94 351	3.73	15 th
8	Undefined scope of working risk factor	39 195	28 112	4 12	10 20	13 13	94 352	3.74	16 th
9	High competition in bids risk factor	34 170	34 136	7 21	11 22	8 8	94 357	3.80	6 th
10	Inaccurate project program risk factor	41 205	31 124	5 15	9 18	8 8	94 370	3.94	11 th
11	Poor communication between the home and field offices risk factor	43 215	26 104	3 9	11 22	11 11	94 361	3.84	12 th
12	Unavailability of labour risk factor	44 220	28 112	6 18	9 18	7 7	94 375	3.99	10 th
13	Varied labour and equipment risk factor	43 215	25 100	4 12	9 18	13 13	94 358	3.81	13 th
14	Supplies of defective materials risk factor	40 200	25 100	2 6	10 20	17 17	94 343	3.65	17 th
15	Accident occurrence risk factor	42 210	26 104	0 0	15 30	11 11	94 355	3.78	14 th
16	Inaccurate quantities	46 230	30 120	4 12	11 22	3 3	94 387	4.12	6 th
17	Not coordinated design	43 215	25 100	4 12	9 18	13 13	94 358	3.81	13 th
18	Defective design	40 200	25 100	2 6	10 20	17 17	94 343	3.65	17 th
19	Rush design	38 190	39 156	5 15	8 16	4 4	94 381	4.05	7 th
20	Awarding of design to unqualified designers	39 195	39 156	3 9	7 14	6 6	94 380	4.04	8 th
	Grand Mean							3.8	

Source: Researcher's field survey

Table 5.10 above shows the predominant risk factors that influences building construction project performance. The findings of the study indicates that financial risk factor has the highest-ranking mean index of 4.35, followed by environmental risk factor with a mean ranking index of 4.34. Lack of consistency between bill of quantities, drawings and specifications has a mean index of 4.33 while construction risk factor has a mean index of 4.26, legal risk factor has a mean index of 4.22 whereas high competition in bids risk factor and inaccurate quantities has the same mean index of 3.80, rush design has a mean index of 4.05 while awarding of design to unqualified designers has a mean index of 4.04. political risk factor has a mean ranking index of 4.02. Unavailability of labour risk factor has a mean index of 3.99. Inaccurate project program risk factor has a mean index of 3.94 while Poor communication between the home and field offices risk factor has a mean index of 3.84. Varied labour and equipment risk factor has a mean index of 3.81. Accident occurrence risk factor has a mean index of 3.74 while

management risk factor has a mean index of 3.73. Undefined scope of working risk factor has a mean ranking index of 3.74 while defective design and Supplies of defective materials risk factor has the same mean index of 3.65.

5.1.5 ANALYSES OF THE FOURTH OBJECTIVE

Table 5.15: To determine if significant relationship exists between risk management practice and organizational building project performance in the selected federal institutions in Enugu, Anambra and Imo state.

Dependent Variable: CPP

Method: Least Squares

Date: 06/29/23 Time: 02:53

Sample: 2010 2022

Included observations: 13

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPP	1.069328	0.765129	1.397579	0.1898
RMP	0.250332	4.150696	0.542158	0.5985
R-squared	0.026026	Mean dependent var		0.670154
Adjusted R-squared	-0.062517	S.D. dependent var		0.728105
S.E. of regression	0.750520	Akaike info criterion		2.404537
Sum squared resid	6.196078	Schwarz criterion		2.491452
Log likelihood	-13.62949	Hannan-Quinn criter.		2.386672
F-statistic	0.293935	Durbin-Watson stat		0.268192
Prob(F-statistic)	0.598521			

Source: Eviews computation

The result of the regression analysis in table 5.15 above indicates that risk management practice has a positive relationship on the building project performance; this implies that an increase in risk management practice will

lead to increase in the building project performance whereas a decrease in risk management practice will lead to decrease in building project performance on the average. More so, the result indicates that a unit increase in the value of the risk management practice will lead to 0.250332 increases in the value of the building project performance on the average.

The result further indicates through the value of the correlation coefficient (r^2) that the rate at which the independent variables explain what happens on the dependent is 2.6% which is considered by the researcher to be very small.

Finally, the value of the Durbin Watson statistics which is used to measure the normality distribution of the regression residuals reveals that the variables are normally distributed.

Table 5.16

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Risk Management Practice ^b	.	Enter

a. Dependent Variable: Construction Project Performance

b. All requested variables entered.

Table 5.17

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161 ^a	.026	-.063	.75052

a. Predictors: (Constant), Risk Management Practice

Table 5.18

ANOVA^a

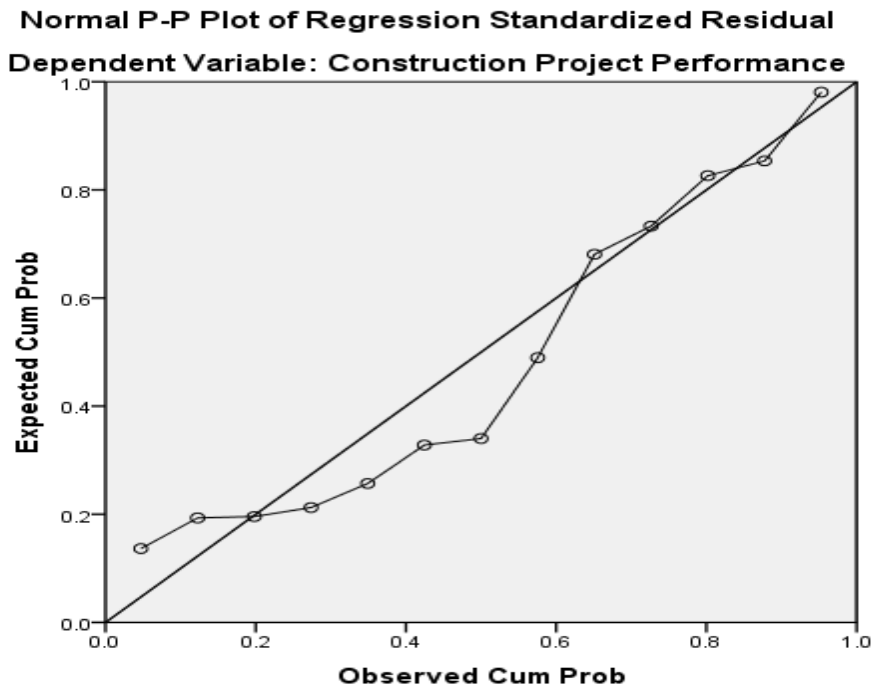
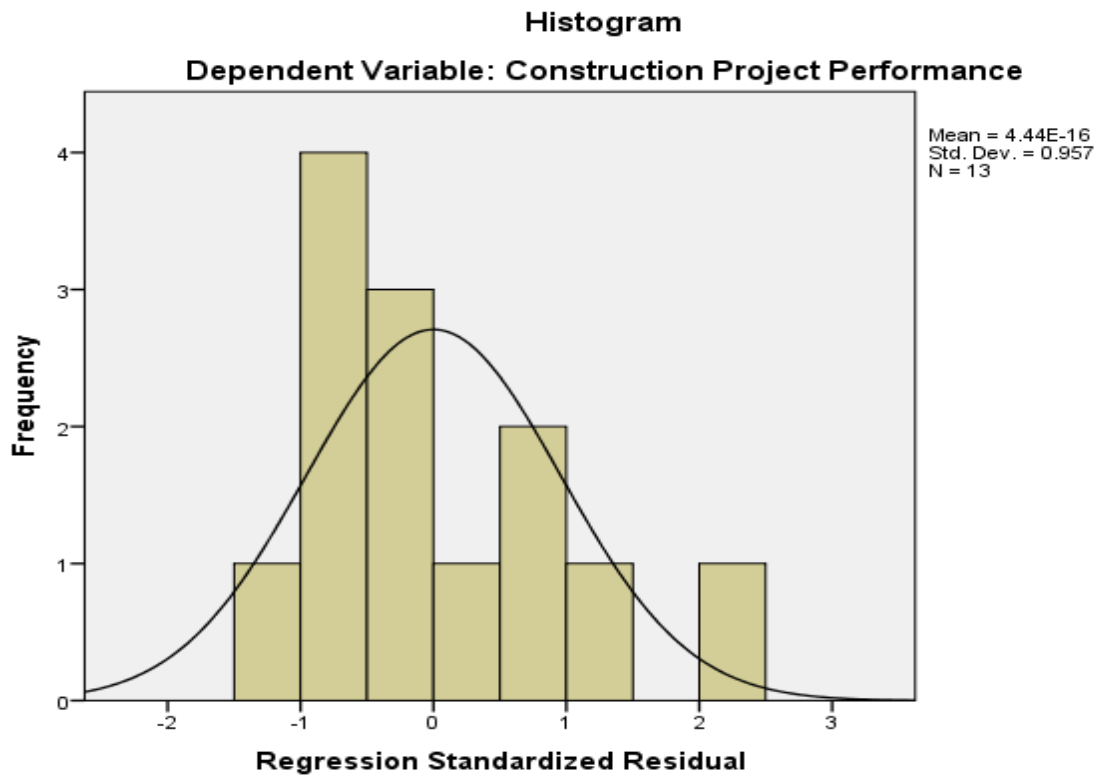
Model		Sum Squares	df	Mean Square	F	Sig.
1	Regression	.166	1	.166	.294	.599 ^b
	Residual	6.196	11	.563		
	Total	6.362	12			

a. Dependent Variable: Construction Project Performance

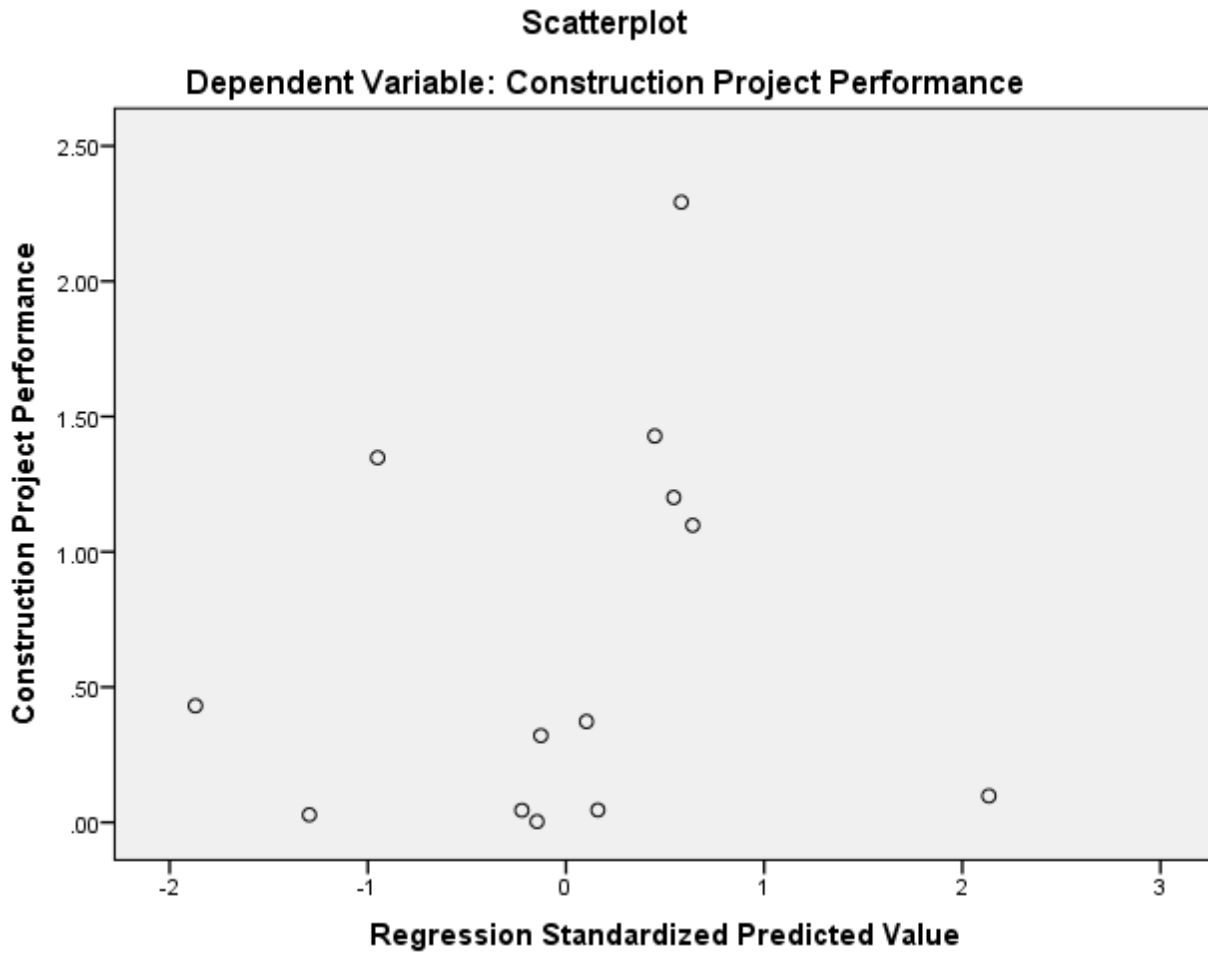
b. Predictors: (Constant), Risk Management Practice

Source: Field Survey [SPSS computation 2023]

The ANOVA statistics which aim at exploring the F-statistics result indicates that the combine influence of all the independent variables (risk management practice) on the dependent variable is 0.294 which is equivalent to 2.9%. The result is considered by the researcher to be small and highly insignificant.



From the result of the scatterplots above, the line of the dependent variable (building project performance) is seen to be trending upwards around the regression line, indicating that risk management practice has a positive impact on the building project performance within the time frame under study.



5.2 TEST OF HYPOTHESES

Hypotheses one

Ho: Risk management practice has no significant impact on the cost of building construction project in South Eastern Nigeria.

One-Sample Test

Null Hypothesis	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Risk management practice has no significant impact on the cost of building construction project in South Eastern Nigeria.	0.044	94	.011	0.03300	0.021	0.302

Source: SPSS Computation 2023

From the test of hypothesis above using one sample test t-statistics, based on the decision rule, accept null hypothesis if the value of the t-statistics is greater than 0.05, from the result; the value of the t-statistics (0.044) is less than 0.05 hence we reject the null hypothesis and conclude that risk management practice has significant impact on the cost of building construction project in South Eastern Nigeria.

Decision rule

Accept the null hypothesis (H_0) if the value of computed test statistics is greater than 0.05 level of significance.

Decision:we reject the null hypothesis and conclude that risk management practice has significant impact on the cost of the selected federal institutional building projects in South Eastern Nigeria.

Hypotheses Two

H₀:Risk management practice has no significant impact on the quality of building construction project in South Eastern Nigeria.

One-Sample Test

Null Hypothesis	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Risk management practice has no significant impact on the quality of building construction project in South Eastern Nigeria.	0.035	94	.041	0.00130	0.12	0.34

Source: SPSS Computation 2021

From the test of hypothesis above using one sample test t-statistics, based on the decision rule, accept null hypothesis if the value of the t-statistics is greater than 0.05, from the result; the value of the t-statistics (0.035) is less than 0.05 hence we reject the null hypothesis and conclude that risk management practice has significant impact on the quality of building construction project in South Eastern Nigeria.

Decision rule

Accept the null hypothesis (H_0) if the value of computed test statistics is greater than 0.05 level of significance

Decision: We reject the null hypothesis and conclude that risk management practice has significant impact on the quality of the selected federal institutional building projects in South Eastern Nigeria.

Hypotheses Three

H₀:Risk management practice has no significant impact on the time of building construction project in South Eastern Nigeria.

One-Sample Test

Null Hypothesis	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Risk management practice has no significant impact on the time of building construction project in South Eastern Nigeria.	0.021	94	.001	0.00220	0.12	0.34

Source: SPSS Computation 2021

From the test of hypothesis above using one sample test t-statistics, based on the decision rule, accept null hypothesis if the value of the t-statistics is greater than 0.05, from the result; the value of the t-statistics (0.021) is less than 0.05 hence we reject the null hypothesis and conclude that risk management practice has significant impact on the time of building construction project in South Eastern Nigeria.

Decision rule

Accept the null hypothesis (H_0) if the value of computed test statistics is greater than 0.05 level of significance

Decision: We reject the null hypothesis and conclude that risk management practice has significant impact on the time of the selected federal institutional building projects in South Eastern Nigeria.

6.2 Conclusion

Based on the findings of the study conclude that the identified predominant risk factors that influence building construction project performance in Nigeria are the lack of consistency between bill of quantity drawing and specifications, environmental risk factors, financial risk factor, legal risk factor and several others. The study also reveals that risk management practice has a positive relationship on the building project performance. finally, the study concludes that one of the best ways the identified risk management challenges facing the construction project performance in the selected federal institutional building project in South East can be resolved is by risk identification.

6.3: Recommendations for further studies.

This research as earlier stated serves as a precursor for more researches in this field of study. Therefore, this research recommends that further studies should:

1. There is need for government and relevant stakeholder in the industries to enforce the application of risk management in order to reduce/minimize the rate of in building project so as to enhance the performance of building construction project in Nigeria and South East in particular.
2. The relationship as indicated in the result that risk management has a positive and significant impact on the building project performance which implies that an increase in the risk management practice will lead to a significant increase in the building project performance. Hence, there is need to improve the risk management strategies already in place so as to improve the performance of building construction project in the South Eastern Nigeria.

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