



## Risk Management Towards Effective Project Planning in South-South Nigeria

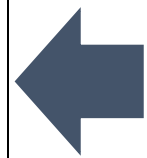
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*Project delivery has become a vital tool for a nation's economic measurement and evaluation. Project success is valued in terms of delivered time, executed cost, work quality, and environmental sustainability. Meanwhile, the actualization of the listed objectives may be hindered by factors identified as risks like poor estimation, poor construction management, variation, and so on. Risk management is the most effective project management practice in order to achieve project delivery and sustainability. This work aims at identifying and evaluating the risks militating against the successful delivery of construction projects in Nigeria and the means of curbing it. Data were collected via distributed questionnaires and case studies. The study utilized a qualitative, descriptive research method. The article is theoretical in nature and drew its arguments from secondary sources, such as journals, books, newspapers, Internet sources, and official documents the data collected were analyzed using nonparametric statistics such as the t-test statistic. Findings revealed that the level of practice of risk management in project planning in Southern Nigeria is significantly low, this is due to inadequate involvement of Project managers in the early stage of the project. Risks identified like inadequate quantities, corruption, and poor planning have a significant impact on project delivery in Nigeria. The work further revealed that risks do not occur at a specific work stage but spread through the whole project life cycle while impacting more on the execution stage. It is concluded that for successful project delivery in Nigeria, all parties involved must factor risk effect into planning in order to ensure successful delivery of the project to time, expected quality, and cost.*



ABSTRACT

**Keywords:** Risk Management; Effective Project Planning; Expected Quality and Cost; South-South Nigeria

## **Introduction**

Projects are exposed to both internal risks (financial, design, contractual, construction, personal, involved parties, and operational risks) and external risks (economic, social, political, legal, public, logistical, and environmental risks). All the risks may influence the cost, schedule, or quality of the project in negative ways (Charoenngam and Yeh, 1999). Therefore, risk management should be well recognized and handled as an integrated function of project management. Nigeria's economy grew by 3.6% in 2021 from a 1.8% contraction in 2020, underpinned on the supply side by a 4.4% expansion in the non-oil sector against an 8.3% contraction in the oil sector; non-oil growth was driven by agriculture (2.1%) and services (5.6%). On the demand side, public and private consumption were contributors to GDP growth. Per capita income grew by 1.0% in 2021. The fiscal deficit narrowed to 4.8% of GDP in 2021 from 5.4% in 2020, due to a modest uptick in revenues, and was financed by borrowing. Public debt stood at \$95.8 billion in 2021 or about 22.5% of GDP.

Risks in construction often cause time and cost overruns. Many projects have been delayed or exceeded their planned budgets, as project managers could not manage risk effectively. These problems seem to happen more frequently these days, because of the emerging nature of the economy. Projects today are exposed to considerably more risks and uncertainties because of factors such as planning and design complexity, presence of various interest groups (project owner, consultants, contractors, vendors, etc.), resource availability (material, equipment, funds, etc.), climatic environment, social concerns as well as economical and political statutory regulations. Oil and gas are critical to Nigeria's economic and social performance. Oil alone accounts for 40 percent of the country's GDP, 70 percent of budget revenues, and 95 percent of foreign exchange earnings. Nigeria's dependence on petroleum is much greater than that of many other major producing countries.

Today, the industry continues to grow strongly implying demands for the construction of new oil and gas facilities. Oil and gas construction projects are often capital-intensive. Hence, their successful implementation is strategically important. However, oil and gas construction projects are exposed to risks because of large capital investment, involvement of many stakeholders, use of complex technology, and high environmental and social impact. Oil and gas projects in Nigeria are implemented through joint ventures and partnerships involving multinational companies like Shell, Mobil, Total, Chevron, Agip, etc. Such partners supply capital and high technologies needed for oil and gas projects which Nigerian partners are still lacking. The participation of foreign partners makes the projects suffer from risks such as differences in practices between domestic and foreign partners, policy and political risks, security risks, financial risks, and legal and political risks. The inflation rate in Nigeria is quite high; while the national currency is relatively weak. Nigeria is located in West Africa; a region considered the most dynamic and challenging in the world. The quality of management in Nigeria is still below world standard as the country is emerging from a planned economy. In view of the above, oil and gas construction projects in Nigeria pose lots of risks that can cause adverse impacts on project implementation. Therefore, there is an urgent need for good risk management in oil and gas project management.

## **Statement of the Problem**

The South-South region of Nigeria is characterized by its economic significance, rich natural resources, and diverse socio-cultural landscape. However, project implementation in this region is often hindered by a multitude of risks and uncertainties, ranging from environmental factors to regulatory challenges and socio-political dynamics. These risks can lead to project delays, cost overruns, and even project failures. "Despite the immense potential of the South-South region of Nigeria, the lack of comprehensive risk management strategies poses significant challenges to effective project planning and execution. How can an integrated risk management framework be developed and implemented to enhance project planning and success in the context of the unique risk landscape of South-South Nigeria?" Risk Management Towards Effective Project Planning revolves around the challenges and deficiencies in integrating robust risk management practices into the project planning process within the context of the South-South region of Nigeria. This study seeks to explore the specific issues and barriers that hinder the successful

incorporation of risk management strategies into project planning activities and to propose solutions that can enhance the overall effectiveness of project execution and outcomes in this geographical area.

### **Objectives of the Study**

The following objectives were defined for this study. These objectives were derived from the aim of the study which was to evaluate risk management strategies for project execution in the oil and gas industry. The specific objectives are:

- i. To examine the level of risk management strategies in project execution in the oil and gas industry
- ii. To assess the relationship between risk management strategies and project execution in the oil and gas industry.
- iii. To measure the relationship between risk response technique and project time schedule.

### **Statement of Hypotheses**

- i. The level of risk management strategies in project execution is significantly low in the oil and gas industry.
- ii. There is no significant relationship between risk management strategies and project execution in the oil and gas industry.
- iii. There is no significant relationship between risk response technique and project time schedule.

### **Review of Related Literature**

#### **Conceptual Review**

#### **Risk Management Practice**

Risk management can be described as the process of conducting risk management planning, identification, analysis, responses, and monitoring and control on projects (Project Management Institute, 2008). From this definition, risk management during oil and gas projects execution can be defined as a systematic means of identifying, analysing and controlling risks associated with the activities of an oil and gas project for the sole aim of achieving the objectives of the project. Therefore, it needs to be recognised as a necessity for project delivery and as an integral component of the project management mechanism during the life cycle of such capital projects. Several studies have suggested differing sequences for the risk management process but Zayed, Amer, and Pan (2008) concluded that risk management based on consensus in most literature is established on a three-fold process comprising of: risk identification, risk assessment and risk mitigation. Regardless of the views on what constitutes the risk management process, Raz, and Michael (2001) concede that a commonality among most risk management processes is the presence of systematic and unsystematic procedures aimed at identifying and mitigating inherent project risks.

There is ample evidence to show that several studies have extensively examined various aspects of risk management in the oil and gas industry. For instance, Makui, Mojtahedi, and Mousavi (2010) applied the fuzzy multi-attribute group decision making to develop a methodology for identifying and analyzing risks in oil and gas industry projects. Ebrahimnejad, Mousavi, and Mojtahedi (2009) identified important risks in Iranian onshore gas refinery plants and introduced a fuzzy multi-criteria decision-making model for industry applications. Mojtahedi and Mousavi (2011) proposed the leave-one-out-cross validation resampling approach as an effective framework for assessing climate change risk data obtained from experts' judgments during construction projects in Iran. Iranmanesh, Jalili, and Pirmoradi (2007) proposed a new structure called the risk breakdown matrix to measure risks in engineering procurement and construction projects.

Baker, Ponniah, and Smith (1997) examined the choice and use of successful risk response techniques within the oil and gas industry and compared them with techniques chosen by the construction industry. The above demonstrates that scholarly activities on risk management appears well appreciated and should be widely adopted during oil and gas industry projects in Nigeria or other regions. Nonetheless, Fayek, et al. (2006) still recorded that the overall performance of most oil and gas projects has been dismal in recent times. Therefore, in anticipation of the enactment of the Nigerian Petroleum Industry Act and with Nigeria's current drive towards revamping its oil and gas industry operations, it is anticipated that the findings from this paper will further contribute to the knowledge which relates to the application of risk management in oil and gas construction projects and facilitate greater awareness amongst industry practitioners and researchers in Nigeria's oil and gas industry. This study also provides guidance with regards to issues and challenges which must be dealt with in the risk management strategy implementation and project actions, in order to successfully accomplish future oil and gas industry projects in Nigeria.

### **Management**

Management (or managing) is the administration of an organization, whether it be a business, a not-for-profit organization, or government body. Management includes the activities of setting the strategy of an organization and coordinating the efforts of its employees (or of volunteers) to accomplish its objectives through the application of available resources, such as financial, natural, technological, and human resources (Lethon, 2016). The term "management" may also refer to those people who manage an organization. Management is the organizational process that includes strategic planning, setting objectives, managing resources, deploying the human and financial assets needed to achieve objectives, and measuring results (Morris, 2014). Management also involves recording and storing facts and information for later use or for others within the organization. Management functions are not limited to managers and supervisors. Every member of the organization has some management and reporting functions as part of their job" (Terry, 2014).

Management is the art, or science, of achieving goals through people. Since managers also supervise, management can be interpreted to mean literally "looking over" – i.e., making sure people do what they are supposed to do. Managers are, therefore, expected to ensure greater productivity or, using the current jargon, 'continuous improvement' (Ramos, 2014). More broadly, management is the process of designing and maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims (Koontz and Wehrich, 2009). In its expanded form, this basic definition means several things. First, as managers, people carry out the managerial functions of planning, organizing, staffing, leading, and controlling. Second, management applies to any kind of organization. Third, management refers to managers at all organizational levels. Fourth, the aim of all managers is the same – to create surplus.

Finally, managing is concerned with productivity – this implies effectiveness and efficiency. Thus, management refers to the development of bureaucracy that derives its importance from the need for strategic planning, co-ordination, directing and controlling of large and complex decision-making process. Essentially, therefore, management entails the acquisition of managerial competence, and effectiveness in the following key areas: problem solving, administration, human resource management, and organizational leadership (Koontz and Wehrich, 2009).

## Project

Imaga, Igwe and Nwoji (2005) define project as a scientifically evolved work plan devised to achieve a specific objective within a specified period of time. For Gray and Larson (2008), a project is a complex, nonroutine, one-time effort limited by time, budget, resources and performance specifications designed to meet customer needs. While project has several definitions, a simple and relatively inclusive one is that a project is a sequence of tasks performed to achieve a unique goal within a specific time frame (Mingus, 2002). Uniqueness is the key word. It is what separates projects from operations and what makes them more difficult to manage. To standardize further on the definition of the word, the Project Management Institute (2008) in its Project Management Body of Knowledge (PMBOK) Guide defines a project as a temporary endeavour undertaken to create a unique value or service. Meredith and Mantel Jr. (2000) view projects as characterized by general attributes such as the purpose, life cycle, uniqueness, interdependencies and conflicts. Project management is the planning, directing and controlling of organization's resources for a relatively short-term objective that has been established to complete specific goals and objectives (Kerzner, 2002).

For this paper project is viewed as a related set of tasks planned, performed and coordinated to achieve a specific objective or output at a given location within a limited scarce resource and period of time. For the Project Management Institute (2006) project management is "the application of knowledge, skills, tools and techniques to project activities, in order to meet or exceed stakeholders' needs and expectations. It is designed to make better use of existing resources by getting work to flow horizontally as well as vertically within the project organization. The growth of application of sound project management principles has come about through necessity than through desire. The economic environment in Nigeria and indeed other developing countries today characterized by frequent changes in monetary and fiscal policies have made it more imperative for sound management of projects in business and public sectors.

## Project Execution

Project management begins once a project has been agreed upon, a project manager has been selected, and a project management methodology has been decided. Once this happens, the project life cycle is underway. The project life cycle is made up of four stages:

- I. Project initiation
- II. Project planning
- III. Project execution
- IV. Project closure

After the project is initiated and the project planning takes place, it is time to execute the third stage of the project life cycle. One can define **project execution** as the stage of the project life cycle where the project's work gets done. The project execution phase is often the longest and most complex stage of the project life cycle because this is where the majority of the project's work happens. This is the stage where the steps outlined during project planning are put into action.

Many activities occur during the project execution stage:

- i. Begin work
- ii. Manage workflow for all project tasks
- iii. Issue management
- iv. Risk Management
- v. Manage any needed change orders

- vi. Manage project communications to stakeholders
- vii. Verify that milestones are reached
- viii. Conduct gateway reviews as needed
- ix. Report on project status to stakeholders

The project's complexity dictates the degree to which each of the above steps is involved.

The project execution phase is the life cycle's largest and most complex phase. It is where the work of the project gets done. During the project execution phase, the project manager oversees the work of the project task owners and ensures that those tasks are completed on time and within budget and that the project workflow continues smoothly. In order to effectively complete this phase, the project manager approaches project execution through the lens of three subphases: building deliverables, monitoring and control, and reviewing. These subphases are sequential phases that must be completed in order, as the results of building deliverables are then acted upon during the monitor and control subphase, and then the review subphase is completed once the first two are complete. These subphases provide key data to the project team so that adjustments can be made during future execution stages of this project. They happen in a constant, iterative sequence (building deliverables, monitoring and control, and review) as different project steps enter the execution phase at different times.

### **Risk Management Process**

The process of managing risk is the bedrock that is attached to understanding as well as managing risks in project work. An efficient implementation of the process in a project requires the participation of all the steps in the process of risk management when dealing with risks. The risk management process consists of the main stages (Giannakis and Louis, 2011; Ubaniet al., 2015 & Kuria and Kimutai 2018).

#### **I. Risk Identification**

This is the primary phase in the process of managing risk, and it has to do with capturing all the risks that tend to occur in the course of the project (Nnadi et al., 2018). This first stage lays the foundation for the succeeding steps of risk assessment and control as it is an eye-opener for organizations to understand inherent risk areas. When risk identification is done accurately, it guarantees effective management of risk as it exposes hidden sources of losses that could escalate into incidences that could not be managed with unforeseen consequences (Ghasemi, et al. 2018).

The outcome of not being able to identify positive risks is equal to the consequences of not identifying adverse risks (Fadun and Saka 2018).

#### **II. Risk Assessment/Analysis**

According to Kumar et al., (2018), assessing the identified risk is the following phase in the processes of managing risk after identification. Risk assessment is a process in which usable information is used in the determination of the frequency of occurrence as well as the degree of consequences in risk management (Olamiwale, 2014). Having identified all the risks in a project, the next thing to embark on is qualitative risk assessment which calls for additional analysis via investigating and estimation of the tendency of risk occurrence and its effect on each of the identified risks (Nnadi et al., 2018). The different factors that require consideration at this stage include the impact of risk on the objectives of a project and how it can be managed. Others are the timing of an occurrence, the probability of an event as well as its connection with other risks. Altogether, they give a proper understanding of each risk and facilitate a better response to each threat.



RISK ASSESSMENT MATRIX									
SEVERITY	CONSEQUENCES				INCREASING LIKELIHOOD				
	PHYSICAL	INTELLECTUAL	HUMAN	FINANCIAL	1	2	3	4	5
					Never happened	Heard of it happening to other organizations	Has happened to my organization at least one time in the past	Has happened to my organization more than once	Has happened to my organization more than once per year
1	No damage	No effect	No effect	No effect	<b>Continuously monitor and make improvements as needed</b>				
2	Minor damage	Minor effect	Minor effect	Minor effect					
3	Moderate damage	Moderate effect	Moderate effect	Moderate effect			<b>Mitigate impact to as reasonably possible</b>		
4	Major damage	Major effect	Major effect	Major effect					
5	Destroyed	Massive effect	Massive effect	Massive effect			<b>Identify and enact critical changes needed to protect and maintain operations</b>		

### III. Risk Responses

The central component of the risk management process which determines whether any action will be taken with respect to the risks analysed in the course of identification, qualification and quantification stages is referred to as risk response (Ghasemi et al., 2018). Risk responses are arrived at by suggesting many options for the eradication or moderation of an anticipated risk and allocating the best substitute as a response (Nnadi et al., 2018). Olmiwale (2014), argued that risk response is the procedure of discovering or fashioning out alternative reactions to risk and the determination of activities for handling the risk, focusing on opportunities, and reducing pressures to achieve the objectives of the project. Thus, it has to do with choosing an appropriate policy to reduce the negative effect of risk.

### IV. Risk Control

Necessary actions must be taken after risk identification, assessment, and risk responses have been fully developed. Execution of a risk plan is a part of risk supervision and control which should be a fundamental part of the project. The first out of the two main challenges encountered in the course of monitoring and controlling is the implementation of the risk plans as well as their effectiveness.

The second main challenge is the designing of significant documentation to back up the process. Risks are being managed in such a manner to facilitate the effective management of the project. It is centred on a proactive approach other than a reactive approach to ensure the right measures are in place as well as continually refining them.

### Theoretical Review

Except a problem is well understood, it cannot be effectively addressed. The theory of competitive advantage has been adopted as a framework for understanding risk management uncertainties in the oil and gas industry. This is because it encourages the opportunity to do things differently up and down the supply chain – the correlation between uncertainty and value capture. In turn, a conceptual model is developed alongside its linear model. The mindset of the decision maker and the value chain within the industry are examples of constructs this framework examines.

## Competitive Strategy

The key to competitive success lies in an organization's ability to create unique value. Here Porter prescribes five (5) forces framework; where creating value and not beating rivals is at the heart of competitive risk management systems and ensuring a firm's profitability in the long run.

From Porter's analysis, strategic positioning reflects choices an organization makes about the kind of value it will create and how the value will be created. Her choices can be likened to decisions project managers are compelled to make when faced with uncertainty. Invariably, Porter (2008) is arguing that for uncertainty to be a competitive advantage, the following must be right: The mindset of the decision maker, and the structure of the industry within which the decision maker is operating. In other words, for a decision to be favourable to the organization in terms of creating "value", the mindset of the decision maker must create unique value and not the "best".

Consequently, the instrument of the survey will address questions like "What is your organisation's strategy for risk management". Strategies that aim to explain how organizations faced with competition will achieve superior risk management practices. In other to survive organizations must gain a competitive risk management advantage. However, what competition is and how it works remain alien to the construction industry in Nigeria. If the structure is not right 'value' cannot emerge.

## Value Chain

Notably, the value chain plots the flow of goods and services up and down the supply chain. Drawing on this context, the value chain is arguably regarded as a descriptive construct, which can provide a heuristic framework for the generation of data. Trends in value chain theorization, provide some analytical structure in the transformation of heuristic devices into analytical risk management tools. Overall, the value chain is an important construct for understanding the distribution of returns arising from design, production, marketing, coordination, and reverse engineering.

## A Conceptual Model

Risk can be defined as uncertainty. Uncertainty is in itself an opportunistic platform for creating "unique value" (Porter 2008). In other words, competitive advantage encourages the creation of unique value. Therefore, this conceptual model which is developed based on the theory of competitive advantage, depicts a plot of 'value' against uncertainty where the variable 'value' focuses the actor on the specific activities that generate a new way of evaluating and managing uncertainty. The maximum value is achieved in the quadrant with "High Satisfaction" and "High Information". The minimum value is linked with the quadrant having "Low Satisfaction" and "Low Information".

Thus, a regression model is derived to mimic the application of the conceptual model in order to assess the impact of the attributes of Uncertainty on Value; where a linear model is based upon the algebraic details of a straight line. This multiple regression model consists of one dependent variable and many independent variables.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad \dots \dots \dots \text{Equation 1}$$

Where Y = is the total project value or the dependent variable;

$\beta_0$  is the intercept (constant);

$X_{i-n}$  = uncertainty attributes (cost, time, and quality) or independent variables.



That is, Value = Cost + Time + Quality + Power.....Equation 2

### **Empirical Review**

Makombo (2011) carried out a study to identify the risk management frameworks in the construction industry of SA – he stated that obstacles related to RM were found to be the skills gap among the professionals dealing with such issues, poor scope management, and a lack of focus on RM in the project initiation phase – hence RM is almost always ‘crisis management endeavour. Most of the respondents stated that they had not planned risk management activities, there was no formal risk management structure in place, and intuition and experience were used for risk decision-making.

Jiang (2014) studied the relationship between project management and Project Success in China. The objective of his study was to analyse the role of management in the success of the project, the author used documentary review and found that although leadership or manager is rarely included in the project planning factors, it influences the project's success through various patterns, like the teamwork skills, management knowledge, and techniques with both followers and clients.

Fatima, Alyaa, and Abdul (2013) investigated change management and its Contribution to the Success of Project Implementation in Malaysia. They used documentary analysis and found that the numbers of projects failure are currently high and this is due to various factors but the main factor stated was poor project management. According to Belel and Mahmood, (2012), who assessed risk management in the Nigerian construction industry, they identified knowledge deficiency as the most intolerant issue that hinders risk management practice as well as small experienced staff as the primary source of risk in construction activities. They posited that the significant benefit of risk management is its contribution to project success. They opined that a large number of their respondents are conscious of managing risk with regards to safety threats on site compared to identifying the concept with relation to accomplishing the objectives of the project concerning cost, quality, and time. They proposed that the workforce in the country's construction industry should be trained on how to manage risks.

Previous research results in Nigeria have established that organizations that employ construction services on a periodic basis do not analytically practice risk management, which has led to adverse effects on the performance of projects, for example, total abandonment of projects (Aibinu and Jagboro, 2002). Also, a study conducted by Ojo, (2010), on claims and contract conflicts in numerous construction projects, had shown that the effect of risk occurrence that was not well assessed or incorporated by clients, contractors, and consultants is a major cause of claims and disputes in construction projects. The country has failed to focus more on risk management during construction and the inability to manage risks properly consequently led to an increase in project failure.

### **Methodology**

This study used the survey method. The survey methodology used attempts at providing answers to the research questions through a well-structured questionnaire. The researcher will be able to make recommendations and reach a conclusion based on the results of the data collected and analysed. This study was carried out in 2 cities in southern Nigeria; these cities are known to be the centre of construction development. These cities are Asaba, known as the commercial hub of Delta state country, which has and is presently experiencing major construction projects; Port-Harcourt, a major city in the Niger-Delta region, known for its massive development due to the concentration oil companies. This forms the basis for the selection of the research area. The population for the study comprises of a total of one thousand six hundred and fifty-three (150) main players within the built environment, comprising of three hundred and thirty-three (32) Clients, eight hundred and ninety-four (87) Contractors and four hundred and twenty-six (31) Consultants involved in public project in the study area. This was obtained from the ministry of works of each of the five southeast states under study. The population was sampled using stratified random sampling and purposive sampling technique. This resulted in a total sample size of 109. Out of 109 questionnaires distributed, 90 of them were completed, returned and considered useable. Two methods of data analysis were used in the study. These were percentage frequencies and commented tables. The second method was test of hypotheses using the  $\chi^2$  (Chi square) tool. The Chi square tool is given as

$$x^2 = \sum \frac{(fo - fe)^2}{fe}$$

Where,  $x^2$  = chi-square statistics

fo = observed frequencies

fe = expected frequencies

$\sum$  = summation sign

**Decision Rule** = If  $X^2_c$  Calculated  $\geq X^2_{\infty}$  Table, then reject Ho (Null Hypothesis) and accept Hi (Alternative Hypothesis).

**Data Presentation and Analysis**

**Data Presentation**

This section handled the collation, counting, tabulation and presentation of data in percentages and commented tables.

Tables 1 to 7 Demonstrate the Research Data

**Table 1:** Data on Questionnaire Return Rate by Different Players

<i>Players</i>	<i>Questionnaire Administered</i>	<i>Questionnaire Returned</i>	<i>Percentage Return%</i>
<i>Clients</i>	32	20	63
<i>Contractors</i>	87	50	57
<i>Consultants</i>	31	20	65
<i>Total</i>	109	90	72

**Source:** Field Survey 2022

Table 1 demonstrated significantly high instrument return rate by all the participating units. This overall return rate is 70%.

**Table 2:** Level of Practice of Risk Management

<i>s/n</i>	<i>Proposition</i>	<i>Responses</i>	<i>Number</i>	<i>Percentage %</i>
5	Emphasis on adaptation to internal and external risk factors	SA	20	22
		A	20	22
		D	25	28
		SD	25	28
		Total	90	100
6	Existence of formal plan to respond to future risk	SA	30	45
		A	10	-
		D	30	33
		SD	20	22
		Total	90	100.0
7	Existence of inadequate involvement of project managers and consultants in early assessment of risks.	SA	50	72.0
		A	-	-
		D	40	-
		SD	-	-
		Total	90	-
8	Existence of important risk operational objectives for players to key into	SA	20	72.0
		A	20	12.0
		D	25	16.0
		SD	25	0.0
		Total	90	100.0

**Source:** Field Survey 2022

Table 2 demonstrated that an average of 84.0% of the respondents disagreed that the level of practice of risk management strategic planning practices is high in southern Nigeria

**Table 3:** Relationship Between Risk Management and Project Planning

<i>s/n</i>	<i>Proposition</i>	<i>Responses</i>	<i>Number</i>	<i>Percentage %</i>
9	Practitioners adopts risk rating tools so as to reduce excessive cost overrun and time overrun	SA	50	56
		A	-	-
		D	-	-
		SD	40	44
		Total	90	100
10	Emphasis on formidable risk reduction and transfer techniques that can aid in increasing output quantity and quality	SA	20	22
		A	30	34
		D	20	22
		SD	20	22
		Total	90	100
11	Actions focus on reducing risks and material weaknesses which limit increase in cost overrun and time overrun	SA	20	22
		A	10	11
		D	25	28
		SD	35	39
		Total	90	100.0
12	Managers are trained to match risk management techniques with overall project planning objectives	SA	20	22
		A	20	22
		D	25	28
		SD	25	28
		Total	90	100

**Source:** Field Survey 2022

Table 3 showed that an average of 79.0% of the respondents agreed that there is a relationship between risk management and project planning.

**Table 4:** Relationship Between Definition of Risk Assessment Objective Practices (RAOP) and Cost Reduction in Project Planning (CRPP)

<i>s/n</i>	<i>Proposition</i>	<i>Responses</i>	<i>Number</i>	<i>Percentage %</i>
13	Existence of operational objectives which helps in maximizing results and Meeting Deadlines	SA	60	67.0
		A	20	22.0
		D	-	-
		SD	10	11.0
		Total	90	100.0
14	Existence of specific objectives which target cost reduction in all operations	SA	60	67.0
		A	22	24.0
		D	-	-
		SD	8	9
		Total	90	100.0
15	All operational objectives are designed to increase value added project delivery and reduce cost of project.	SA	50	56.0
		A	20	22.0
		D	10	11.0
		SD	10	11.0
		Total	90	100.0
16	Practitioners are trained to achieve objectives and reduce or lower costs	SA	50	56.0
		A	20	22.0
		D	10	11.0
		SD	10	11.0
		Total	90	100.0

**Source:** Field Survey 2022

Table 4 revealed that on the average 89.0% of the respondents agreed that there is relationship between their company’s practices of defining strategic objectives and reduction in cost of operations.

**Table 5:** Relationship between risk response technique and project time schedule (PTS)

s/n	Proposition	Responses	Number	Percentage %
17	Managers emphasizes operational choice actions contribute continuous improvement to all processes	SA	50	56.0
		A	22	24.0
		D	10	11
		SD	8	9
		Total	90	100.0
18	Managers are trained to make periodic trend reporting as a way of monitoring and preventing risk.	SA	8	9.0
		A	52	58.0
		D	20	22.0
		SD	10	11.0
		Total	90	100.0
19	Employees are trained to adopt and support operational choice actions which encourage continuous process improvement.	SA	20	22.0
		A	22	24.0
		D	30	33.0
		SD	18	21.0
		Total	90	100.0
20	Employees agree that all emphasis is on reducing the likelihood of risk occurrence	SA	60	67.0
		A	22	24.0
		D	8	9
		SD	-	-
		Total	90	100.0

**Source:** Field Survey 2022

Table 5 demonstrated that an average of 81.0% of respondents agreed that there is relationship between strategic choice actions practices (SCAP) and continuous process improvement (CPI).

**Data Analysis**

This section analysed further the data generated in section 4.1

The method of data analysis adopted was test of hypotheses using X<sup>2</sup> (chi-square) tool.

**Test of Hypothesis**

**Hypothesis 1**

H<sub>01</sub>: The level of risk management practices in project planning is significantly low in Southern Nigeria

H<sub>11</sub>: The level of risk management practices in project planning is significantly high in Southern Nigeria

**Table 6:** Proposition Capturing Hypothesis One

Proposition Capturing Ho	Agree	Disagree	Total
Proposition 5	40	50	90
Proposition 6	40	50	90
Proposition 7	50	40	90
Proposition 8	40	50	90
Total	170	190	360

**Source:** Field Survey 2022

(a) Calculation of Cell Values

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

**Table 7:** (c) Table of Contingence for Hypothesis One

<i>Observed F (O)</i>	<i>Expected F (E)</i>	<i>O-E</i>	<i>(O-E)<sup>2</sup></i>	<i><math>\frac{(O-E)^2}{E}</math></i>
40	43	-3	9	0.209
40	43	-3	9	0.209
50	43	7	49	1.140
40	43	-3	9	0.209
50	48	2	4	0.083
50	48	2	4	0.083
40	48	-8	64	1.333
50	48	2	4	0.083

Source: Field Survey 2022

$$X^2 \text{ calculated} = 3.349$$

**Decision Rule**

If  $X^2$  calculated (3.349) is  $< X^2(5.991)$ , we accept  $H_{01}$  ie. The level of risk management practices in project planning is significantly low in Southern Nigeria.

**Hypothesis 2**

$H_{02}$ : There is no significant relationship between risk management and project planning in Southern Nigeria

$H_{12}$ : There is significant relationship between risk management and project planning in Southern Nigeria

**Table 8:** Proposition Capturing Hypothesis Two

Proposition Capturing Ho	Agree	Disagree	Total
Proposition 9	50	40	90
Proposition 10	50	40	90
Proposition 11	30	60	90
Proposition 12	40	50	90
Total	170	190	360

Source: Field Survey 2022

**Calculation of Cell Values**

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

$$\frac{170 \times 90}{360} = 43 \qquad \frac{190 \times 90}{360} = 48$$

**Table 9:** Table of Contingence for Hypothesis Two

Observed F (O)	Expected F (E)	O-E	(O-E) <sup>2</sup>	$\frac{(O-E)^2}{E}$
50	43	7	49	1.140
50	43	7	49	1.140
30	43	13	169	3.930
40	43	-3	9	0.209
40	48	8	64	1.333
40	48	-8	64	1.333
60	48	12	144	3.000
50	48	2	4	0.083

Source: Field Survey 2022

$$X^2 \text{ calculated} = 12.168$$

### Decision Rule

If  $X^2$  calculated (12.168) is  $> X^2(5.991)$ , we reject  $H_{o2}$  and accept  $H_{i2}$  ie. There is significant relationship between risk management and project planning in Southern Nigeria.

### Conclusion

In the light of the evidence, this study confirmed the moderating effect of risk management, which was highly statistically significant for project planning and project success of construction businesses operating in the economies of Southern Nigeria. Time, cost and quality are the factors to be considered during the implementation of risk management. 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. An effective risk management process encourages the stakeholders in the industry to identify and quantify risks and to consider risk containment and risk reduction policies. Construction companies and consultants to construction projects that manage risk effectively and efficiently through holistic risk management techniques, enjoy financial savings, and greater productivity, goodwill, improved success and customer satisfaction. It is however pertinent to note that risk management will not totally eliminate the risks associated with construction projects, but it will help practitioners in taking proactive measures in managing these risks by minimizing their probability of occurrence and impact-if they do occur, on the project objectives of schedule, cost, quality and scope.

### Recommendations

The study recommends the following:

- i. That construction stakeholders should embrace a rigorous process for managing risk with the intention of improving the overall quality of construction projects.
- ii. A careful risk management framework must be based on identification of the key factors and the independencies among these factors inherent in each project environment
- iii. There is need for improved effective and efficient monitoring and evaluation of project/ program. This can be done by timely communication of the results of M & E to the users for decision making purposes.



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