Analysing the Impact of Risk Management Practice on Construction Project Performance: A Systematic Literature Review

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Abstract

This study thoroughly analyses various literature based on the impact of risk management on construction projects in Nigeria. The research was conducted within Nigeria and neighboring developing countries to establish a comparable framework for future resolutions. This research aims to evaluate the impact and investigate the current state of risk management practices in the Nigerian construction industry, focusing on common risk factors that significantly impact project performance. Objectives include understanding risk management and project performance status, investigating the Nigerian construction industry’s current adopted risk management practices, and exploring project managers’ and other stakeholders’ perceptions of risk management effectiveness. Utilising a quantitative systematic review approach, the study involves an analysis of relevant literature spanning ten years from this research date. The study examines the impact of factors such as inflation and price fluctuations, inadequate financial resources, government policy inconsistencies, area boys’ extortions, and changes in building design scope by clients on construction projects. The research recommends training stakeholders in risk management practices to reduce risk impact, vocational training for artisans, establishing indigenous risk managers within regions, and creating a risk management model specific to Nigeria’s prevailing risk factors. Ultimately, this research serves as a reference for government officials and policymakers to evaluate the current management practices in Nigeria and implement policy modifications to establish a functional environment and system for construction stakeholders.

Keywords: Risk Management, Risk, Construction, Nigerian Construction project, Project Performance

1. Introduction

The construction industry contributes significantly to the growth of a nation's economy through the creation of value chains, providing employment, and contributing to the Gross Domestic Product (GDP) (Owoo and Lambon-Quaye\textsuperscript{f}io 2018; Urbański \textit{et al.} 2019; Al-Mhdawi \textit{et al.}, 2022\textsuperscript{a}). Schoon Winkel \textit{et al.} (2016) described that construction projects encompass a wide range of endeavours like factories, commercial buildings, hospitals, schools, and highways, which are not just infrastructural developments but essential to modern societies' social and economic value creation.

Nigeria, a developing country on the west coast of Africa, has experienced a shift from the norm over the past few decades, challenging its status quo. Despite the harsh business environment, the construction industry in Nigeria contributed N12.9 trillion to the country’s GDP in the first three quarters of 2022, according to research by the National Bureau of Statistics (NBS). Moreover, the NBS report highlights that the construction sector's contribution to the nominal GDP reached 9.5% in the third quarter of 2022, surpassing the 9.26% it contributed in 2021 and the 7.95% in the second quarter of 2022. This sector also witnessed an 18.92% increase in nominal terms year—
—over-year during the third quarter of 2022.

The industry’s significance lies in its extensive connections with various sectors of the economy, both backward and forward, resulting in significant multiplier effects. Nevertheless, it is essential to note that no construction project is risk-free (Al-Mhdawi et al., 2022b). According to research, both industry practitioners and academics concur that the complexity of construction projects makes them more vulnerable to risk than initiatives in other industries. (Shojaei and Haeri 2019, Taofeeq et al. 2019). Therefore, it is essential to study and consider the significance of associated risks on the industry and in-depth into managing the risk of the construction project performance in Nigeria. According to Project Management Body of Knowledge Guide (2018), risk may be described as the likelihood that particular occurrences may negatively impact project objectives; It is the degree of exposure to adverse events and the likelihood of their repercussions. Project risk is characterised by three key indicators: the risk event or identification (what could go wrong with the project), the risk probability (the likelihood of the event occurring), and the amount at stake (the potential loss).

Risk can be defined in various ways, and different techniques are available to categorise it for distinct objectives. Some broadly categorise risks in construction projects generically as external and internal risks; In contrast, others classify risk in more granular categories such as political, financial, market, intellectual property, social and safety (Songer et al., 1997; Ghassemi and Khodabande, 2015). The handling of these risk factors with the aim to reduce or eliminate the occurrence and impact of adverse outcomes and to promote positive effects is known as risk management; in the construction project context it is both an art and science involving identifying, analysing, and responding to risk factors in the best interests of the project’s objectives throughout the project’s duration (Banaitiene and Banaitis 2012).

According to Taofeeq et al. (2019), risk management includes risk identification, qualitative and quantitative assessment, and reacting with a suitable strategy to manage and control. According to Serpell et al. (2015), risk management is a planned and proactive procedure meant to reduce the possibility of unfavourable outcomes for a construction project at several stages, including design, construction, and operation. For efficiency in the management of risk from the listed definition of risk management, it is essential to adopt an appropriate and systematic approach and methodology and incorporate tested and approved knowledge and experience of the several types (Banaitiene and Banaitis, 2012). In Nigeria, construction projects cannot boldly claim to be adopting a generic methodology or widely certified or satisfactory method of managing risk within the sector, considering the nation as a developing country. Prior empirical research in Nigeria has demonstrated that industries that offer periodic construction services do not systematically implement project risk management practices, resulting in detrimental effects on project performance (e.g., total project abandonment) (Aibinu and Jagboro, 2002). In addition, the study by Ojo (2010) on claims and contract disputes in numerous construction projects revealed that risks not effectively analysed or integrated by clients, contractors, or consultants were one of the primary causes of claims and disputes in the building projects. In addition, Iroegbu (2005) made a similar point, saying that the Nigerian construction industry needs to put more emphasis on risks during construction projects and that these risks, when mismanaged, have contributed to the failure of many construction projects.
1.1 Problem statement
In Nigeria, several challenges are plaguing the construction industry and the overall effectiveness of projects, causing project failure via project delays (time overrun), cost overrun, failure to meet the scope of work, and poor quality compared to the design at the initiation and outright project abandonment. Several reports back these concerns, especially in more recent times; for example, according to the World Economic Forum’s 2020 Global Competitiveness Index, Nigeria is ranked 131st out of 190 nations in terms of the quality of its infrastructure, showing that there is much opportunity for improvement in the performance of Nigerian construction projects (Shkabatur, Bar-El and Schwartz, 2022). Also, a survey by the Nigerian Institute of Quantity Surveyors states that delays occur in about 56% of building projects, which can result in cost overruns and decreased quality (Eze et al., 2020). Hence, there is a need to examine the possible causes of these failures and how they can be resolved. The failures are encapsulated within the context of the project as risks. A proper approach to managing these risks would help mitigate the statistics that indicate the poor state of the Nigerian construction industry concerning projects. Through the evaluation of this topic, the research aims to identify the most effective risk management strategies for preventing project failures and the contextual factors that enhance their effectiveness. This information will help establish standards and best practices for risk management in Nigerian construction projects, ultimately improving project performance and reducing failure rates.
Table 1. Review of past articles

<table>
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<tr>
<th>S/N</th>
<th>Author (year)</th>
<th>Aim and Objective</th>
<th>Region</th>
<th>Methods</th>
<th>Key findings</th>
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<tr>
<td>1</td>
<td>Adebayo, B.O. and Olatunde, N.A., 2022.</td>
<td>To investigate risk factors with high levels of occurrence and their impacts on project goals.</td>
<td>Nigeria</td>
<td>Systemic Literature review Survey</td>
<td>The study draws attention to risk variables that may have an adverse impact on the success of construction projects for schools. Additionally, it aids in resolving issues related to contracting companies' managing of risk.</td>
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<td>2</td>
<td>Ubani, E.C., Amade, B., Okorocha, K.A., Agwu, F.O. and Okogbue, F., 2015.</td>
<td>The purpose of this study is to identify the existing risks and uncertainties in the Nigerian construction sector. To assess the extent of risk management process application and awareness and the effect of recognised risks on the project's predefined cost, schedule, quality, and scope objectives.</td>
<td>Nigeria</td>
<td>Systemic Literature review Survey</td>
<td>The majority of construction managers and contractors in Nigeria are not familiar with formal risk management approaches. Promoting awareness of the use of risk management processes and techniques in the construction industry could be significantly aided by advocacy for a regulatory framework that requires contractors to submit a risk assessment report and risk management plan when submitting a bid for any construction project. Risk management implementation and awareness will also improve with strict monitoring of construction projects' adherence to international best practices for risk management and enforcement of legal requirements before and during execution.</td>
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<th>3</th>
<th>Adeleke, A.Q., Bahaudin, A.Y., Kamaruddeen, A.M., Bamgbade, J.A. and Ali, M.W., 2019.</th>
<th>To investigate the influence of organisational external factors on construction risk management.</th>
<th>Nigeria</th>
<th>Quantitative Questionnaire</th>
<th>The study’s findings show that the measurements for the four constructs—technology, politics, economic factors, and construction risk management—are reliable indicators of their respective component parts, as indicated by parameter estimations.</th>
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<td>4</td>
<td>Fadun, O.S. and Saka, S.T., 2018.</td>
<td>Examine the implementation of Critical Success Factors (CSFs), project management tools, and methodologies in Nigerian construction projects. Identify and categorise CSFs specific to construction projects and assess their significance across different project phases.</td>
<td>Nigeria</td>
<td>Survey</td>
<td>The study provides a thorough list of potential accidents in building projects. It also aims to determine the reasons behind these mishaps.</td>
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<td>5</td>
<td>Bahamid, R.A. and Doh, S.I., 2017.</td>
<td>The paper’s objectives are twofold: firstly, to identify commonly used methods for risk analysis and identification. Secondly, to explore future research directions concerning project risks in developing nations within the construction field. This includes addressing and clarifying existing classifications of risk sources in the literature.</td>
<td>Nigeria</td>
<td></td>
<td>The risk management process (analysis, identification, and response) is thoroughly reviewed in this study using available research.</td>
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### Table 1. Continued.

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<th>No.</th>
<th>Author(s)</th>
<th>Year</th>
<th>Methodology</th>
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<td>6</td>
<td>Ugwu, M.C., Osunsanmi, T.O. and Aigbavboa, C.O.</td>
<td>2019</td>
<td>Quantitative Survey</td>
<td>Nigeria</td>
<td>This study assessed the method used in Nigeria's construction industry for managing construction risk.</td>
<td>The findings showed that, like developed countries, the Nigerian construction industry adopted the best risk management practice in construction projects.</td>
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<td>7</td>
<td>Bukar, A.A. and Ibrahim, U.A.</td>
<td>2021</td>
<td>Survey</td>
<td>Nigeria</td>
<td>The study aims to determine how risk management affects the performance of building projects in Nigeria.</td>
<td>The survey revealed that the construction sector's main risk issue is the absence of a regulatory framework for corporations and enterprises in the industry to adopt and apply.</td>
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<td>8</td>
<td>Okudan, O., Budayan, C. and Dikmen, I.</td>
<td>2021</td>
<td>Literature review</td>
<td></td>
<td>The goal of this study is to create a web-based organisational learning tool that can be used to record, store, access, and share knowledge about risk.</td>
<td>The study provides a comprehensive explanation of how an entire Case-Based Reasoning system can be incorporated into a knowledge-based Risk Management tool. This innovative approach offers valuable insights for fellow researchers seeking to develop similar tools in their respective domains.</td>
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1.2 Aim and Objectives
The study aims to evaluate the impact of risk management practices on construction project performance in Nigeria. To achieve this aim, the following objectives have been outlined: review the state of risk management and project performance; investigate the current adopted risk management practices in the Nigerian construction industry; evaluate the effectiveness of risk management practices in Nigeria compared to global standard practices; determine the most common types of risks encountered in Nigerian construction projects and to investigate project managers’ and other stakeholders’ perceptions of risk management practice effectiveness in Nigerian construction projects.

2. Literature Review
Numerous studies have explored the realm of risk management for construction projects, with the focus being on the identification of a vast number of risks that may affect the construction project's completion (Siraj and Fayek 2019; Al-Mhdawi et al., 2023a and Al-Mhdawi et al., 2023b). There are abundant risk and risk-related definitions in the literature on construction projects. In the construction industry, risk is typically defined as the presence of prospective or actual threats or opportunities that impact the project’s objectives during construction, completion, or use. In theory, risk is usually defined as a variable’s change from its expected value, either up or down. In everyday language, “risk” only means “loss” (Zenghua, 2011; Al-Mhdawi et al., 2023e). Risk can also mean when the results of one or more future events do not turn out how we expect them to; technically, these results could have a positive or negative impact. However, most of the time, people only think about the bad things that could happen if something negative happens in the future. This harm could come from having to pay or not getting a good outcome (Ubani et al., 2015). According to Renault et al. (2016), risk is a declaration of what might happen due to ignorance. While Smith, Merna and Jobling (2014) opined that “where there is some understanding about the event, risks develop”. Webb (2003a) stated that risk refers to a circumstance with some knowledge of the potential outcomes. Risk exposure may be positively or adversely appraised; Cooper et al. (2005) agreed, saying, “Risk is exposure to the consequences of uncertainty.”

2.1 Concept of Risk Management
Aminu (2013), in a project writeup about risk, stated that nothing is certain when pursuing a goal; there is always the possibility of deviating from the plan. Each step in attaining our objective entails uncertainty and a risk that must be addressed. Risk management has been discussed for hundreds, if not thousands, of years (Dallas, 2008). According to Nnadi, Enebe and Ugwu (2018), risk management is crucial to decision-making. It can impact construction project productivity, performance, quality, and budget. Risk management aims to ensure that all stakeholders in a construction project comprehend the project’s unique risks and devise patterns for managing these risks for efficient project completion. Risk management is essential to achieving goals and not just for avoiding adverse outcomes brought on by rare occurrences or uncertain circumstances. Nevertheless, it also serves as the necessary guide to maximise positive outcomes.

Risk management is among the most crucial project management practices for ensuring the successful completion of a project. Experience has shown, according to Royer (2000), that risk management must be a top priority for project managers, as unmanaged or unmitigated risks are one of the leading causes of project failure. Thus, risk management is directly related to the practical completion of a project.
More definitions are examined over the research regarding risk management; however, a prominent definition adopted for its inclusion of positive and negative sides of risk would be the PMI (2004) definition; it defines risk management as "the processes concerned with conducting risk management planning, identification, analysis, responses, and monitoring and control on a project in order to increase the probability and impact of positive events and decrease the probability and impact of negative events in the project". It is clear that risk management entails or should include opportunities and threats. Risk management is concerned with identifying, monitoring, and mitigating hazards. In certain situations, the acceptable risk may be close to nil. Risks can arise from incidents, natural causes, and disasters, as well as from adversary attacks. In risk management, the risk with the most significant potential loss and likelihood of occurrence is managed first, followed by the risk with the least potential loss and likelihood of occurrence in descending order. Evaluating total risks is complex, and balancing resources used to moderate risks with a higher likelihood of occurrence and lower loss versus risks with a lower likelihood of occurrence and more significant loss is often misunderstood. Risk identification is the initial step in a risk management procedure to characterise the risk's threat. The next stage is to evaluate the susceptibility of significant assets to specific threats and to assess the risk, which involves estimating the likelihood of risk occurrence for specific assets. Methods for reducing these hazards are identified, and risk-reduction measures are prioritised. When risks are not correctly prioritised and evaluated, time is wasted attempting to mitigate risks that will never materialise (Aminu, 2013). In recent years, risk management has begun to affect an expanding number of businesses, not just the most prominent initiatives. Despite this, modest construction projects lack significant systematic risk management (Simu, 2009).

2.3 Risk Management Process
The risk management process provides the foundation for recognising and managing hazards in project work. When dealing with risks, an efficient implementation of the process in a project necessitates the involvement of all steps in the risk management process. The risk management process is divided into several parts, as listed below.

2.3.1 Risk identification
Risk identification is the first step in the risk management process, and it entails identifying all the risks that are likely to arise during the undertaking (Nnadi, Enebe and Ugwu, 2018); this initial step provides the groundwork for subsequent risk assessment and control steps, enabling organisations to recognise inherent risk areas. Accurate risk identification guarantees effective risk management because it reveals concealed origins of losses that could develop into incidents with unmanageable unintended consequences (Ghasemi et al., 2018). The consequences of failing to identify positive risks are equivalent to failing to identify adverse ones (Fadun and Saka, 2018).

2.3.2 Risk assessment/analysis
Kumar et al. (2018) state that assessing the identified risks is the next step in risk management after identification. In risk management, risk assessment is the process by which valuable information is used to determine the frequency of occurrence and severity of consequences (Olamiwale, 2014). Risk analysis can be performed qualitatively or quantitatively. Qualitative risk analysis is the process of determining the probability and impact of a risk. Several methods are applied to conduct qualitative risk analysis, including risk matrices (Mahamid, 2011 and Kassem et al., 2020). Quantitative risk analysis is the process of using numerical data and mathematical models to assess and evaluate risks.
It involves assigning specific values or probabilities to various risk factors and then performing calculations to quantify the potential impact and likelihood of the identified risks; this helps in making data-driven decisions and prioritising risk management actions based on a more objective and quantitative understanding of the risks involved. Several methods are used to carry out quantitative risk analysis, including the Analytical Hierarchy Process (Al-Mhdawi et al., 2022c), Bayesian networks (Qazi et al., 2023a; Qazi et al., 2023b), and fuzzy sets theory (Al-Mhdawi et al., 2023d).

### 2.3.3 Risk response

Risk response is the fundamental component of the risk management process that determines if any measures will be implemented in response to the risks analysed during the identification, qualification, and quantification stages (Ghasemi et al., 2018). Risk responses are determined by proposing numerous alternatives for eradicating or mitigating an anticipated risk and allocating the optimal substitute (Nnadi, Enebe and Ugwu, 2018). Olamiwale (2014) argued that risk response is the process of identifying or creating alternative responses to risk and determining activities for managing the risk, focusing on opportunities, and reducing pressures to attain the project's objectives. Thus, it involves selecting an effective procedure to mitigate the negative impact of a risk.

### 2.3.4 Risk Control

The appropriate actions must be implemented after identifying risks, conducting risk assessments, and developing appropriate responses. The execution of the risk plan is a component of risk oversight and control, both of which ought to be essential aspects of the project. The first of the two most significant obstacles that can arise throughout the process of monitoring and controlling is putting the risk strategies into action while ensuring that they are effective. The development of substantial documentation to support the process constitutes the second primary obstacle to overcome (Ugwu, Osunsanmi and Aigbavboa, 2019). The project's risks are handled in such a way as to make the overall project management easier to manage effectively. It is predicated on a proactive strategy instead of a reactive approach, aiming to ensure that the appropriate measures are adopted while continuously modifying them. Due to the fact that there are certain scenarios in which the risk is incorrectly identified, or errors are committed during the analysis, the risk management process needs to exercise extreme caution at this stage to avoid carrying out something that was either incorrectly identified or incorrectly analysed.

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2.4 Risk management in the construction industry

There are various ways to categorise construction projects, including residential, commercial, new building, renovation, and destruction. Takim and Adnan (2008) made it clear that a high degree of risk must be considered because of the intricate nature of building activities. The complexity of construction projects, which makes them fraught with lots of uncertainty, is also highlighted by (Banaitiene and Banaitis, 2012). This complexity also increases the degree of uncertainty in the sector, which makes the construction industry one of the most versatile and potentially dangerous businesses with high exposure to risk (El-Sabek and McCabe, 2018). The process of putting R.M. into practice must be adapted to every project, and its success is determined, in most instances, by the construction project size, project scale, project phase and expertise—
— and knowledge of the risk management team of the project. (Van Well-Stam, Lindenaar and Van Kinderen, 2004)

According to Walewski and Gibson (2003), it is challenging to establish a connection between risk management and the various stages of a construction project’s life cycle. The life cycle of a construction project consists of distinct phases, each of which is the responsibility of a unique set of stakeholders. The constant thread is that nobody cares until a specific risk materialises. Then, consciously or subconsciously, the party wants to shift that risk onto another (Kim and Bejaj, 2000). In order to account for every possible risk that could occur throughout the project, all consultants must be engaged from the beginning. The most critical step is to coordinate and integrate the various components. Collaborating effectively and closely can help with this. Klemetti (2006) echoed this sentiment, writing that collaboration is essential to building quality projects. The success of a construction project requires the collaboration of many people who all bear some of the risk. Coordination of daily tasks, implementing effective problem-solving procedures, and on-site management may be required to ensure efficient performance in the face of project variations, timetable modifications, claims, fluctuations, and incomplete plans. Coordination is required so that all involved parties can see the full scope of potential dangers.

Although scholars generally agree that exhaustive risk distribution cannot be done in the construction business merely through contractual arrangements, Klemetti (2006) regards contracts as a tool for sharing risks; when established behavioural patterns and shared working procedures make parties’ reactions more predictable, risks are already reduced. Furthermore, all project participants benefit as uncertainty decreases with a more predictable and secure future. Construction parties with risk-related qualities that could facilitate project delivery include trust and dedication on the part of the contractor, client, and consultants, along with efficient collaboration and communication. Establishing mechanisms such as arbitration or other forms of established conflict resolution is vital, as is the equitable allocation of both known and unknown risks. Achieving this requires a foundation built on collaboration, open lines of communication, shared goals, shared roles, prospects, individual accountability, and personal responsibility.

2.5 Risk management in the Nigerian construction industry
Previous studies have shown that the performance of construction projects is significantly impacted when industries that regularly use construction services do not employ risk management (Aibinu and Jagboro, 2002). According to Ojo (2010) and Adeleke et al. (2018b), who searched entitlements and contract disputes in a variety of construction projects, one of the leading causes of claims and disputes in the construction industry is the occurrence of risks that were not appropriately assessed or incorporated by either customer, contractors or consultants. Knowledge of the risk management team of the project. (Van Well-Stam, Lindenaar and Van Kinderen, 2004)

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—risk management, with disastrous consequences for the execution of projects (Aibinu and Jagboro, 2002). In addition, Ojo's (2010) investigation into the causes of claims and contract negotiations across a variety of construction projects found that the impact of risk occurrences that were not well evaluated or integrated by clients, contractors, and consultants is a major cause of claims and disputes in construction projects. Failure to prioritise risk management during construction in this country has contributed to more failed projects (Nnadi et al., 2018). Poor performance from this group of contractors throughout the years has been a cause for alarm, especially when compared to their overseas competitors. With a history of bankruptcy, low-quality work, mismanagement, diversion, embezzlement of project funds, and a general economic depression, it is hard to see how indigenous contractors can thrive in the face of rising costs, shifting government priorities toward deregulation, rising interest rates on loans, and rising prices for construction materials and financing (Husseini, 1991). This claim would be exposed by a multi-year investigation into the industry's practices. As reported by Ugochukwu et al. (2014) the construction sector in Nigeria is dominated by a limited number of extremely large enterprises, whereas most indigenous contractors are small and medium-sized businesses.

2.6 The impact of risk management on construction performance

Effective risk management directly affects the outcome of building projects. In their research, Aarthipriya et al. (2020) found that the project's success, budget, timeline, and strict compliance with technical specifications were all affected by the process of identifying and assessing risks. Gitau (2015) research further supported the link between effective risk management and successful building projects. Project success was linked to his implementing risk management procedures during the planning phase. According to the study, professional engineers and architects contributed to most projects. Nonetheless, only some participants had formal training in risk management. Adeleke et al. (2018a) conducted a study on the effects of risk management on project success, revealing that implementing risk management procedures significantly enhances project outcomes. They also demonstrate that including risk management increases the likelihood of a successful project outcome. According to the meta-analysis, there is a robust connection between risk management and the success of building projects. In other words, "a higher risk may lead to a higher gain" (Al-Ajmi & Makinde, 2018). The results of projects can be enhanced by taking precautions to reduce potential problems. The cost, duration, and quality of a construction project are significantly affected by risks (Chang et al., 2018). Due to the larger scale and more intricate nature of modern building projects, risk management has emerged as a critical factor in mitigating unintended outcomes.

Furthermore, risk management is crucial for achieving higher performance in building projects. Project success in the construction industry is measured by how well the project meets its schedule, budget, quality, safety, and environmental sustainability goals. According to Gitau (2015) findings, effective risk management strategies implemented during planning can improve project outcomes. More emphasis should be placed on communication and project risk management by creating plans for efficient communication and risk handling when executing projects, and risk management should be organised according to their effect and influence (Daniel, 2019). Similarly, Hartono et al. (2019) analysed project risk management's effect on CPP. Their research shows that adopting Project Risk Management Practices significantly contributes to project success. They also demonstrate that the inclusion of risk management increases the likelihood of a successful project outcome.
From a practical standpoint, project managers and risk managers must pay close attention to uncertainties throughout the project, employ project risk management approaches, and thoroughly understand the business environment. While Abazid and Harb (2018) conducted their study to get a holistic understanding of risk, they focused on the effects of risk in the building industry and the necessary management tasks. There is a discussion of risk's impact on project evaluation and the tools and methods used to mitigate it in the construction business.

2.7 Current state of risk management practices
Recent articles on this subject have indicated that project risk management is conducted concurrently with regular project administration. Risk factors are systematically, deliberately, and purposefully recognised throughout the construction process. However, risk issues are addressed as they arise, alongside general project issues, during progress site meetings (Boateng, Ameyaw, and Mensah, 2022). In a study conducted by Ugwu, Osunsanmi, and Aigbavboa (2019) individuals working in construction-related professions, including contractors, architects, engineers, and quantity surveyors, highlighted their resistance to change and their preference for maintaining the current status quo; participants also cited the lack of support in implementing risk management strategies and enforcing legislative policies from senior management executives, stakeholder executives and the government. The execution of risk management is not prioritised by top stakeholder management, which prevents it from garnering the necessary resources (in terms of risk expertise, funds, and time) and attention. The prospect of accruing costs alone discourages the management, causing them to keep their old methods of operation. An interviewee from a contractor's side stated in an article by Nnadi, Enebe and Ugwu, (2018) that as a result, the company needs more motivation to alter and implement risk management. It is reasonable to conclude that risk management is not conducted systematically, diligently, and consistently, as the management processes lack dedicated time, necessary resources, and effort. This results in an execution best described as irregular and haphazard.

The ineffective nature of risk management extends beyond the identification phase to include the analysis, response, control and monitoring phases. The analysis from interviews conducted by Boateng, Ameyaw, and Mensah (2022) also revealed that risk mitigation strategies, such as the contractors' performance provision, advance mobilisation guarantees, retention sums, and liability defect periods, were included and implemented primarily to satisfy legal requirements. These strategies were not necessarily employed as deliberate attempts to systematically and intentionally control identified and examined risk factors. The respondents in the article noted that there are no specific techniques for monitoring hazards, except for the monthly progress site meetings that cover a wide range of topics and the work schedule.

Hansen-Addy and Fekpe (2015) came to the opposite conclusion, saying that experts in the construction industry take risk management seriously by being anticipatory instead of passive. As a further point (Azhar et al., 2008) found that large and medium-sized businesses in Alabama, USA, implement all parts of the risk management approach. (Mohamed et al., 2015) corroborate this, arguing that reputable, solvent businesses working on large-scale building projects in Malaysia are the ones who engage in formal risk management. Hence, these findings suggest indicators that highlight the distinctions in the construction climate between Nigeria and several other developing countries, particularly in Africa. It is safe to say that it is not unexpected to have a higher percentage of construction projects being abandoned, delayed, cost and budget overrun, and poor quality of delivery. The literature review from the current state of the risk assessment—
implementation suggests this above conclusion for Nigeria and neighbouring developing countries included in this study.

3.0 Research Philosophy and Methodology

3.1 Philosophy
The research philosophy chosen for this study is critical realism, which investigates social events by examining the relationships between variables to determine their causes (Al-Mhdawi, 2022d). Critical realism is based on the belief that there are underlying structures and objectives that influence people's actions, but these structures are often obscured by surface-level occurrences. How risk management practices impact the performance of a construction project is a multifaceted question influenced by factors such as project scope, time, cost, quality, and safety. A critical realist approach is advantageous in this context as it enables a comprehensive examination of how these factors interrelate and influence the overall performance of construction projects.

3.2 Method
A systematic review method with a qualitative approach was employed to conduct this study. This method was selected due to its ability to encompass a diverse range of literature, ensuring a comprehensive and unbiased analysis of available evidence. The qualitative approach was integrated to facilitate an in-depth exploration of non-numerical data. In this context, qualitative research aims to uncover meanings, motives, intentions, beliefs, values, and attitudes while simultaneously exploring a broader spectrum of relationships, processes, and phenomena that cannot be reduced to a set of variables (Maxwell, 2012).

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines were adhered to in order to ensure this study is well-structured since it is recognised as a gold standard in systematic reviews and meta-analyses. Given the reliance on secondary data, the PRISMA 2020 guidelines helped to ensure the proper selection of relevant articles. The process involved identifying articles from reputable databases, including Scopus, Google Scholar, and the International Journal of Engineering and Technical Research (IJETR). Keywords such as "risk management," "construction projects," "construction project performance in Nigeria," "risk management impact," and "Nigeria construction projects" were used for article retrieval. Following the procurement of articles, titles and abstracts were screened, and full texts of potentially relevant articles published between 2010 and 2023 were obtained, adhering to the set inclusion and exclusion criteria. In total, 100 records were initially gathered from these databases. After applying the PRISMA process, the dataset was refined to 31 independent but interrelated studies, which will be puzzled together and create a context to achieve the project objectives.

3.3 Inclusion criteria
- Studies published between 2010 to 2023
- Studies in the English language
- Studies regarding mainly Nigeria and then other developing neighbouring countries

3.4 Exclusion criteria
- Studies not relevant to the research topic
- Studies conducted in developed countries

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3.5 Data Analysis
The data analysis phase encompassed several stages, each contributing to a comprehensive understanding of risk management practices and their impact on construction projects in Nigeria.

- Profiling of Chosen Articles;
In this initial step, the selected articles were profiled based on various parameters, including journal types, publication years, and the authors of each article. This profiling provided a holistic view of the sources and allowed trends and variations analysis in the literature.

- Characterisation of Risk Impacts;
The second objective was to delve into the characterisation of risk impacts on construction projects, specifically focusing on their implications for Nigeria and other developing countries. This characterisation aimed to shed light on the unique challenges and outcomes associated with diverse risk management practices.

- Identification and Categorisation of Common Risks;
Subsequently, a systematic analysis was conducted to identify common and recurring risks across the selected articles. These identified risks were meticulously categorised to create a structured framework, facilitating a comprehensive understanding of the risk landscape within the context of construction projects.

- Ranking of Risks and Impacts;
The final objective involved ranking the identified risks and their corresponding impacts based on the insights from the categorised articles. This ranking exercise allowed us to present a clear and prioritised view of the most critical risks affecting construction projects in Nigeria. Such prioritisation aids in directing attention to the most pressing concerns within the realm of risk management in this specific context.
4.0 Analysis and Results

4.1 Study selection

This study reviewed 100 records from various reliable databases in pursuit of relevant articles. During the initial screening, 25 records were eliminated due to duplication, 10 due to ineligibility, and 12 for other reasons, leaving 53 potential articles. A closer examination of their titles and abstracts led to excluding 15 deemed non-relevant. Out of the 38 articles subjected to a detailed content review, 5 were discarded after full-text evaluation, and 2 more were removed due to its incompatible study design. This rigorous selection process included 31 articles, published between 2010 and 2023, in the review. A flowchart illustrating each selection process step is available in Fig. 2. The studies predominantly focus on Nigeria and feature contributions from five other neighboring countries, as highlighted in Table 2. This geographical diversity enhances the depth and context of our findings.

Figure 2. PRISMA 2020 flow diagram for systematic review

Figure 3 displays the final selection of journals and articles. Notably, both the IOP Conference Series: Earth and Environmental Science and the International Journal of Construction Engineering and Management contributed the most with 3 articles each. Two other journals provided 2 articles each, while 21 journals contributed a single article.

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The gathered resources are further classified based on the source type. A total of 31 studies were retrieved from the literature screening and analysis process. For academics and researchers, the distribution of their publications across various academic journals is crucial. This distribution can significantly influence the exposure and impact of their work. Table 2 below presents the distribution of papers by country. Nigeria features prominently since the research primarily focuses on this country and extends to other developing countries. Another aspect highlighted is the number of citations received by each paper. From the overall distribution, the paper with the highest citation count to date is Adeleke et al. (2018a) with 119 citations, followed by another paper, Adeleke et al. (2018b), with 51 citations, both focusing on Nigeria.

**Table 2. Literature distribution of region and number of citations**

<table>
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<tr>
<th>S/N</th>
<th>Reference</th>
<th>Country</th>
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<td>Nigeria</td>
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<td>Adaralegbe et al 2021</td>
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<td>Bukar et al, 2021</td>
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<td>Ezeabasili, et al, 2021a</td>
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<td>Ibironke et al 2017</td>
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<tr>
<td>11</td>
<td>adedokun, 2021</td>
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Electronic copy available at: https://ssrn.com/abstract=4585886
4.2 Impact of risk factors on construction project performance in Nigeria
From reviewing several articles related to the impact of risk management on construction performance centred around the situation of Nigeria, several risk factors were common in many articles and ranked highest in terms of the intensity and severity of the factors’ impact on the construction project performance. These factors were collected from an organised survey of consultants in Africa with over 10 years of experience. (Joseph et al., 2020)
Below is a list of highly ranked impact risk factor
- Changes in scope
- Inadequate funding by the client
- Civil unrest
- Inflation and fluctuation of prices
- Design discrepancies
- Inconsistent government policy
- Long waiting time for government design and test approval
- Contractors underbidding to get a contract
- Financial instability of contractors and suppliers
- Site access/right of way for suppliers
- Weather issues

Table 2. Continued

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<td>25</td>
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<tr>
<td>31</td>
<td>Adeleke et al, 2018a</td>
<td>Nigeria</td>
<td>119</td>
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4.2.1 Changes in scope
Client scope changes during construction pose a consistent challenge for contractors, particularly engineers, quantity surveyors, and architects in Nigeria. These changes can significantly impact project performance (Adebayo and Olatunde, 2022). The following is an analysis of the influence of scope changes on Nigerian building projects:

- **Project delays:** Changes in scope can result in project delays due to the requirement for redesign, rework, and additional approvals; this can impact project performance by extending the project time, resulting in higher expenses and worse profitability (Hansen-Addy and Fekpe, 2015).

- **Cost overruns:** Changes in scope can result in cost overruns since additional materials, personnel, and equipment are required. (Mohamed et al., 2015). It can also impact project quality by adding additional components not initially included in the design, resulting in safety issues, poor workmanship, and a reduction in overall project quality.

- **Legal and contractual concerns:** Scope changes can cause legal and contractual issues between the contractor and the customer. Contractors in Nigeria suffer contract termination if they do not comply with scope adjustments, resulting in legal challenges and financial losses. (Akinbile et al., 2018). Overall, this factor has caused many buildings to collapse in major cities in Nigeria as contractors are compelled to fulfill the compromised clients’ request to save their earnings and staff remuneration (Appiah, 2020).

4.2.2 Inadequate funding by client
Inadequate client finance is a typical issue for Nigerian contractors, and it can substantially impact project execution and performance (Bukar and Ibrahim, 2021). The following is an examination of the impact of insufficient finance on Nigerian construction projects:

- **Delay in project completion:** Inadequate financing can lead to project delays due to the inability to purchase supplies, hire labour, and acquire necessary equipment. This, in turn, can significantly impact project performance by extending the project timeline, resulting in higher expenses and reduced profitability.

- **Impact on quality:** Inadequate finance can impact project quality by introducing low-quality materials and labour, resulting in safety hazards, poor craftsmanship, and reduced overall project quality.

4.2.3 Area boy’s issues/ Civil unrest
Area boys, also called touts, are a regular problem for building projects in Nigeria. They are groups of young men who use force, threats, and violence to get contractors and workers on building sites to give them money and goods (Adebayo and Olatunde, 2022). Here is a look at the effect that area boys have on building projects in Nigeria:

- **Project delays:** Area youngsters mostly disrupt construction, causing contractors to halt work until security is sourced at a cost.

- **Safety hazards:** Often, area boys use violence and intimidation to compel contractors and laborers to work unsafely, which can result in construction site accidents, injuries, and fatalities, harming both workers and the public.

- **Impact on stakeholder satisfaction:** Area Boys have a detrimental impact on the perception of projects among clients, particularly foreign investors, regulators, and the local community. This often tarnishes the contractor’s reputation and business prospects, as they may struggle to navigate the complex system of legitimising the activities of Area Boys (Boateng, Ameyaw, and Mensah, 2022).
- **Government role:** The government’s silence has empowered the boys’ activities as the politician employs them as agents to disrupt elections in their favour and are now indebted to them (Fadun and Saka, 2018).

### 4.2.4 Inflation and fluctuation of prices

Nigerian building projects often have trouble with inflation and changes in prices. Here is an overview analysis of how inflation and price changes affect building projects in Nigeria:

- **Project performance:** Changes in prices and inflation can make it hard to buy materials, hire workers, and buy tools needed to finish a project; this can cause the project to take longer. As a result, it can affect the performance of a project by making it take longer, leading to higher costs and less earnings.

- **Effects on quality:** Inflation and price changes alter a project's quality by bringing in low-quality products and labour, leading to safety risks, bad work, and a lower overall project quality.

- **Impact on stakeholder satisfaction:** Inflation and price changes can create new risks, delays, and cost overruns. As a result, this can make clients, regulators, and people in the area uncertain of investment, affecting the contractor's image and future business opportunities.

### 4.2.5 Inconsistent Government Policy

Inconsistent government policy poses a common challenge to construction projects in Nigeria. Below is a concise analysis of how Nigeria's inconsistent government policy affects construction initiatives.

- **Project Approval Delays:** Delays in project approval can occur when consultants are required to meet new requirements or seek additional permissions due to policy shifts caused by an inconsistent government. Often, these inconsistencies arise from political motives and interests aimed at obstructing projects initiated by past administrations not aligned with the current political group.

- **Impact on Compliance:** Introducing new regulations or requirements can be challenging and negatively affect the quality of a project. In some cases, there may be implementation biases against consultants associated with opposition parties. Despite policy inconsistencies, projects of similar scale may receive unequal approval. Those with influence in the government may receive lenient policy waivers, while others may not (Aljaloudi, 2018) (Ezebasili et al., 2021b).
<table>
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<td>Inconsistent government policy</td>
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<tr>
<td>Social unrest</td>
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<tr>
<td>Changes in scope</td>
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<td>Design change</td>
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<td>Lack of safety management system</td>
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<td>Poor insurance mechanism</td>
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5.0 Conclusion

5.1 Summary and key findings
As more concepts become available, the challenges and hazards of construction projects grow. Every building project has three main objectives: to finish on schedule, under budget, and with the highest quality results feasible; this involves providing the service requested by the client at the agreed-upon price, in the allotted amount of time, and at the expected level of quality. A project risk is anything that could go wrong and make it more challenging to finish the project on time and within budget. The vast majority of those involved in the building have some understanding of risk management in terms of how to protect themselves from potential dangers.

This research has examined the state risk management practice, the consultant’s perception of the risk factors with high impact, especially in recent times and possible pointers to the mitigation plan for these risks in the Nigeria construction industry and certain neighbouring countries. The major finding from this study is that the inflation rate within the Nigerian economy poses a significant risk to project performance. Additionally, inconsistencies in government policies present threats to investors, particularly when project teams oppose the current administration. The issue of "area boys" extorting professionals at different project milestones through violence and chaotic attacks can paralyse on-site activities if not budgeted for adequately. Furthermore, client-initiated changes in building design scopes, often driven by profit motives, risk compromising the project's structural integrity. The awareness of risk management is on the rise, notably in response to tragic building collapses that have claimed lives in various countries. As a result, this research's relevance and timeliness are underscored, emphasising the pressing need for enhanced risk management practices within the construction industry.

5.2 Key conclusions
Like many developing countries worldwide, Nigeria is associated with challenges in the construction industry. It is an unsurmountable challenge as several developed countries have gone through the pathway and surmounted the challenges. Hence, the acclaimed ‘giant of Africa’ and the number one leading economy of Africa must rise to the frontline of the future of the best effective construction project management practices.

Knowledge is still the most valid solution to mitigate the impact of risk management practices in Nigeria. Impress the knowledge of risk into every party involved in the industry from the university curriculum, frequent workshops around risk management, and town hall meetings of all stakeholders is very important to analysing and creating favourable pathways and solutions to the highlighted risk factors. Vocational training for artisans before getting on-site or graduating from the apprentice programme is critical. It incorporates the growing unemployed youth population who decide to adopt gangsterism ‘area boys’ as their career path to provide for their needs. Creating indigenous risk executioners within regions would subvert the show-up of the Area boys and encourage them to align into available skills within the growing construction industry of Nigeria. There is a need for more research into the effects of many kinds of uncertainty, such as the price of raw materials going up or down, bad weather, and political instability, to name a few. Investigating risk management’s positive effects on the building sector is highly recommended.

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5.3 Implication
The implications of this study from the contribution to academia and the industry include the intelligence available for stakeholders and major consultants to create contingency allocation for risk factors impact while creating project cost and budget documents.
Contingencies like creating area boys’ dues, popularly known as ‘Owo Omo onile’, into the budget plans should be allocated for all the project’s major milestones from foundations to handover. Until the government curbs these area boys’ activities, stakeholders must factor them into the budget to avoid project activities and timeline disruptions.
Secondly, active planning in the procurement of materials should be engaged. Making quick deposits for materials and enforcing designers in creating materials schedules and specification writing in order to engage manufacturers and suppliers early with pricing to avoid fluctuations and inflation from budget plans. Creating a mutual agreement on a payment plan, void of market distraction would help contractors get materials to the site timely without fear of inflation, hereby disrupting cost.
Third, the implication to the industry is that stakeholders can position themselves neutral to any political affiliation but dedicate themselves to the competence of their project performance to market their work.
Researchers can take on the research to create a risk management model peculiar to Nigeria’s prevailing risk factors. This model can be adopted into the curriculum to teach in formal education settings and workshops for professionals; it can also be used by professionals in charge of risk management in the contractors’ firms.
Lastly, government officials and policymakers can use this thesis to observe the obtainable management practice in Nigeria through this research and make policy adjustments to create a workable environment and system for construction stakeholders.

5.4 Research limitation
The research has several limitations that should be acknowledged. Firstly, this study relies primarily on existing research conducted by scholars in the field, as it is a systematic review; consequently, our conclusions are drawn from secondary data rather than primary sources.
Additionally, the study has a limited geographic focus, primarily concentrating on literature related to Nigeria and other developing countries. Therefore, it is important to recognise that the findings may not fully capture construction practices in regions beyond this specific scope. Furthermore, the temporal scope of the study is confined to articles published between 2010 and 2023. This was done to incorporate recent developments; however, it may inadvertently overlook older, yet still relevant, research contributions.

5.5 Future work
Future research should concentrate on possible solutions to the risk factors that impact construction project performance in Nigeria.
It is expedient for Nigeria to adapt the best practices of other developed countries to its unique situation by conducting a comparative analysis of their history, similarity and implementation methods.
More research must be carried out on implementing risk mitigation plans for construction project performance in Nigeria.


Nigeria construction industry.


