STRATEGIC RISK MANAGEMENT AND SUSTAINABILITY OF CONSTRUCTION FIRMS IN SOUTH-EAST, NIGERIA

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Abstract
Strategic risk management is a systematic framework for identifying and addressing uncertainties that could impact an organization's ability to achieve its long-term objectives, thereby enhancing resilience and ensuring operational continuity. This study evaluated the effect of strategic risk management on the sustainability of construction firms in South-East Nigeria, focusing on five key practices and their corresponding sustainability dimensions which are: the effect of risk monitoring on supply chain resilience, risk identification on operational efficiency, risk mitigation on resource conservation, risk communication on stakeholder engagement and also the effect of risk compliance on quality management sustainability. Utilizing a descriptive survey research design, data were collected from 313 employees across 25 purposively selected large-scale construction firms and analyzed using simple linear regression. The findings revealed statistically significant positive relationships across all tested variables. Risk monitoring was found to have a significant effect on supply chain resilience, explaining 21.3% of the variance ($R^2 = .213$, $F(1, 311) = 83.941$, $p = .024$). Risk identification significantly influenced operational efficiency sustainability, accounting for 18.9% of its variability ($R^2 = .189$, $F(1, 311) = 72.316$, $p = .031$). The study concluded that strategic risk management is an indispensable driver of long-term sustainability for construction firms in the region. It is recommended that firm leaders implement formal, enterprise-wide SRM frameworks, and that policymakers create incentives to promote the adoption of these vital practices to enhance industry resilience and performance.

***Key words:** Strategic Risk Management, Sustainability, Construction Firms, and Risk Monitoring*

Introduction

Sustainability has emerged as a fundamental concept in modern organizational practices, emphasizing the critical need to meet present needs without compromising the ability of future generations to meet their own (Anyaegbunam and Anekwe, 2022). This principle underscores a balanced pursuit of economic growth, social development, and environmental stewardship, allowing organizations to create long-term value while addressing pressing global challenges such as climate change, resource scarcity, and societal inequities. The traditional view of success, often measured solely by short-term financial gains, is evolving to incorporate sustainability as a core component of strategic decision-making. By embracing sustainable practices, organizations can enhance their reputations, attract socially conscious consumers, and mitigate risks associated with environmental and social factors. Moreover, integrating sustainability into operations necessitates practices that enhance resilience and adaptability in an ever-changing environment (Okoye, Okolie, and Odesola, 2022). This adaptability is crucial as organizations face increasing pressures from stakeholders demanding transparency and accountability in sustainability initiatives. Thus, organizations are prompted to rethink their operational models, ensuring that sustainability is woven into the fabric of their strategic planning. This transformative approach not only fosters innovation but also positions firms to thrive amidst disruptions, ensuring that they remain relevant in a rapidly evolving marketplace.

Strategic risk management (SRM) serves as a systematic framework for identifying and addressing uncertainties that could impact organizational objectives. By anticipating potential threats and opportunities, SRM enables organizations to navigate complex environments with confidence, thereby enhancing resilience, safeguarding resources, and maintaining operational continuity (Anoke, Osita, Okafor, & Nzewi 2022). This strategic approach is particularly vital in today's interconnected world, where risks can arise from various sources, including economic volatility, regulatory changes, and environmental shifts. SRM cultivates a proactive culture within organizations, encouraging teams to prepare for both predictable and unforeseen challenges (Kukoyi, Simpeh, Adebowale, & Agumba, 2022). By fostering a culture of preparedness, organizations can swiftly adapt to changing circumstances, ensuring that sustainability initiatives are not only maintained but also enhanced in the face of adversity. Furthermore, the integration of SRM with sustainability initiatives can lead to innovative solutions that drive competitive advantage. For instance, firms that effectively manage risks associated with resource scarcity can identify alternative materials or methods that not only reduce costs but also minimize environmental impact. This synergy between SRM and sustainability creates a robust framework that not only safeguards organizational interests but also contributes to broader societal goals, reinforcing the notion that sustainable practices can lead to both ethical and

financial rewards. Ultimately, the intertwining of sustainability and strategic risk management is essential for organizations aiming to achieve long-term success while fulfilling their obligations to society and the planet.

The global construction industry acts as a primary engine for economic development, creating infrastructure that underpins national wealth and significantly contributes to Gross Domestic Product (GDP). Research indicates that the value-added of construction accounts for 7% to 10% of GDP in developed nations and 3% to 6% in developing ones (Lopes, 2022). However, this vital sector is intrinsically defined by high levels of risk and uncertainty arising from project complexity, volatile market demands, and dynamic operational environments ((Iriani, Agustianti, Sucianti, Rahman & Putera, 2024). The construction industry is particularly risk-prone, with its complex project settings fostering an atmosphere of high uncertainty that frequently results in cost overruns and delays (Ogundipe, 2024). In recent years, the imperative for sustainability has gained prominence alongside these conventional challenges. The U.S. Environmental Protection Agency defines sustainable construction as creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life cycle (Dushing & Shete, 2024). This paradigm requires firms to balance economic viability with environmental and social responsibility, creating a fundamental tension between managing immediate project risks and fulfilling long-term sustainability mandates.

Focusing on Nigeria, the construction sector plays an indispensable role in national development, addressing significant infrastructure deficits while contributing substantially to employment and GDP (Ezeudu & Fadeyi, 2024). Despite its importance, the Nigerian construction industry operates within a uniquely challenging and high-risk environment. Firms confront a complex, interconnected system of compounding risks, including severe economic volatility linked to reliance on oil revenue, inconsistent government policies, and pervasive supply chain disruptions (Ikevuje et al., 2024). Research highlights that the country's developmental goals are jeopardized by rising insecurity, substantial debt burdens, rampant inflation, and endemic corruption, all of which cultivate a hostile operating environment for construction firms (Okegbemi, 2024). These challenges are often interlinked; for instance, political instability can lead to policy changes that delay payments, exacerbating financial and cash flow risks for contractors (Chadee, Ali, Gallage and Rathnayake, 2023). This complexity underscores the necessity of a formal, systemic approach to risk management for survival and success in Nigeria.

To navigate this intricate environment, construction firms must evolve beyond traditional project-level risk tactics and embrace a more holistic approach known as strategic risk management (SRM). Defined as the process for identifying, assessing,

and managing risks and uncertainties that could inhibit an organization's ability to achieve its strategic objectives, SRM differs fundamentally from conventional project risk management, which focuses solely on preventing deviations from project-specific goals (Dhlamini, 2022). Instead, SRM is an enterprise-wide discipline focused on long-term survival and value creation. The core components of this strategic approach include robust risk identification practices that encompass brainstorming and root cause analysis; proactive risk mitigation measures designed to reduce the likelihood or impact of threats; continuous risk monitoring systems to track changes in the risk landscape; clear risk communication protocols to ensure all stakeholders are informed; and rigorous risk compliance programs to adhere to legal and regulatory standards.

The construction industry in South-East Nigeria faces a myriad of challenges that threaten its stability and growth. Among these challenges are inadequate strategic risk management practices, which have led to project delays, increased costs, and compromised safety standards. Factors such as regulatory pressures, economic instability, and environmental concerns exacerbate these issues, leaving many construction firms struggling to navigate the complexities of the industry. As a result, the sustainability of these firms is jeopardized, making it imperative to develop effective risk management strategies that can ensure long-term viability in an increasingly competitive and unpredictable environment. The inability to address these challenges not only impacts individual firms but also has broader implications for the construction sector and its contribution to the regional economy.

Many construction firms in South-East Nigeria lack robust frameworks to identify, assess, and mitigate risks effectively. This deficiency often results in a reactive approach to risk management, where firms only respond to issues as they arise rather than proactively planning for potential challenges. Such an approach ultimately compromises the firms' ability to achieve sustainable practices, as they become bogged down by immediate crises rather than focusing on long-term goals. Anoke, Okafor, Onu (2023) noted that the failure to integrate strategic risk management into business operations raises serious questions about the future of the construction sector in the region, particularly as global trends increasingly emphasize sustainability and responsible practices. The necessity for focused attention on this problem is underscored by the growing demand for sustainable construction practices. As societal expectations evolve and regulatory frameworks tighten, construction firms in South-East Nigeria must adapt to remain competitive. The integration of strategic risk management into their operations is not merely an option but an essential requirement for thriving in a market that prioritizes sustainability. However, the lack of understanding regarding how strategic risk management influences sustainability poses

significant challenges. Without clear insights into this relationship, construction firms may continue to face obstacles that hinder their growth and adaptability. Moreover, the absence of effective risk management practices can lead to negative environmental impacts, further complicating the industry's role in sustainable development.

Furthermore, the challenges faced by construction firms in South-East Nigeria are compounded by a lack of resources and expertise. Many firms, particularly smaller ones, may not have the necessary financial or human capital to implement comprehensive risk management strategies. This gap in capability not only limits their ability to respond to immediate risks but also hampers their long-term strategic planning. As the construction industry is a significant driver of economic growth and job creation in the region, addressing these issues is crucial for fostering a sustainable future. The interplay between strategic risk management and the sustainability of construction firms in South-East Nigeria represents a pressing problem that demands attention. The current deficiencies in risk management practices jeopardize not only individual firms but also the broader construction sector and its contribution to economic development. The expectation of optimal performance calls for firms to adopt comprehensive, enterprise-wide risk management strategies that align with sustainability goals, enhancing overall resilience and operational effectiveness.

Objectives

The main objective of this study is to evaluate the effect of Strategic Risk management on Sustainability of Construction firms in South- East Nigeria. The specific objectives of this study are

1. To assess the effect of risk monitoring on the supply chain resilience of construction firms in South-East Nigeria.
2. To examine the effect of risk identification on the operational efficiency sustainability

Hypotheses

In line with the objective of the study, the following hypotheses were formulated to guide the study:

H_{o1}: Risk monitoring has no significant effect on the supply chain resilience of construction firms in South-East Nigeria.

H_{o2}: Risk identification has no significant effect on the operational efficiency sustainability of construction firms in South-East Nigeria.

Literature Review

Strategic Risk Management

The concept of risk management is an indispensable element in modern business, serving to minimize unforeseen costs and thereby maximize returns for an enterprise (Nocco & Stulz, 2022). Within this broad field, Strategic Risk Management (SRM) emerges as a distinct and superordinate discipline. Scholars like Agarwal and Gupta (2024) define SRM as a holistic process that allows an enterprise to align its management practices with its long-term planning, based on its organizational goals and objectives. Frigo and Anderson (2011) provide a comprehensive definition, describing SRM as a process for "identifying, assessing, and managing risks and uncertainties, affected by internal and external events or scenarios, that could inhibit an organization's ability to achieve its strategy and strategic objectives" (Dhlamini, 2022). This approach fundamentally differs from traditional Project Risk Management (PRM), which is a more tactical, sector-specific process focused on controlling deviations from the "triple constraints" of time, cost, and quality for individual projects.

The distinction is critical. As argued by Almashhour, Al-Mhdawi, Daghfous, Qazi and Ojiako (2025), SRM is not about managing the risks in a project, but about managing the risks to the enterprise as a whole. This creates what can be termed a "management paradox" in the construction industry: a firm can successfully execute all its individual projects according to PRM principles, yet still face strategic failure due to broader market shifts, disruptive technologies, or reputational crises that were not on the project-level radar. Therefore, SRM necessitates a profound organizational shift from a purely project-centric view to a holistic, enterprise-wide perspective that safeguards the firm's future value and competitive advantage, especially for firms sensitive to market fluctuations (Kale, Sharma, Kumar and Ranjan, 2024).

Sustainability of Construction Firms

The concept of sustainability has evolved to become a central tenet of modern corporate strategy, particularly within the resource-intensive construction sector. The United Nations' Brundtland Commission famously defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (MacGregor Pelikánová, 2025). In the context of the construction industry, this broad principle is refined into a multi-dimensional framework. The U.S. Environmental Protection Agency (EPA) defines sustainable construction as "the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle" (Anabaraonye, 2024). However, contemporary scholarship argues that this definition must be expanded. A more comprehensive view of sustainability in construction requires a balance between economic, social, and environmental performance, often referred to as the "triple

bottom line". Some scholars further add a fourth pillar of "technical sustainability," which pertains to the performance, quality, and service life of a structure.

This multi-faceted approach means that for a construction firm, sustainability is not merely about implementing "green" building practices but about ensuring its own long-term viability and positive impact (Olawale, 2024). It involves a coherent and long-lasting balance between its operational activities and its responsibilities to the planet, its people, and its profitability. As one study notes, sustainable construction aims to reduce the negative health and environmental impacts of the entire construction process while creating healthy living and workplace environments. Achieving this requires firms to deliver buildings that provide greater satisfaction and value to users, treat stakeholders fairly, enhance the natural environment, and minimize resource consumption (Toochukwu, 2025). Ultimately, a firm's adaptation to sustainable development parameters becomes a significant competitive advantage, increasing profitability through higher value and lower long-term expenses.

Risk Systems

Risk monitoring and control is a critical, yet often poorly implemented, phase of the risk management lifecycle in construction projects (Mabelo, 2023). The Project Management Institute, defines this process as the tracking of identified risks, the identification and analysis of new risks, the monitoring of risk response plan implementation, and the assessment of the effectiveness of the overall risk management process throughout a project's duration (Boateng, Ameyaw & Mensah, 2022). This definition underscores the dynamic and continuous nature of risk; it is not a static element to be assessed once, but an evolving landscape that requires constant vigilance. Many studies have historically concentrated on the initial phases of risk identification and analysis, thereby neglecting the crucial ongoing processes of monitoring and control.10

The consequences of inadequate risk monitoring are severe. One study by Mercy (2024) asserts that construction companies often suffer significant losses because project managers fail to adequately engage in risk monitoring and control. These losses can be substantial, amounting to as much as 85% of a project's total cost in some cases (Venkataraman & Pinto, 2023). Unmonitored or uncontrolled risks are a primary cause of cost overruns, scheduling delays, and inferior project performance, which can ultimately lead to project failure (Giri, 2025). A quantitative study by Utomwen (2024) confirmed this relationship, finding that all project risk monitoring and control practices including risk reassessment, risk audits, contingency reserves analysis, and regular risk status meetings were significantly and positively related to project success. This demonstrates that systematic monitoring is not merely an administrative task but a vital function for ensuring that a firm's strategic objectives are met and its reputation and

financial health are protected (Wang, 2024).

Supply Chain Resilience

Supply chain resilience (SCR) has emerged as a critical capability for firms navigating an increasingly volatile global environment (Basit, Javed, Khan, Aslam & Nazir, 2025). Early definitions, such as that by Sharma, Modgil and Singh (2024), described SCR as the ability of a supply chain to return to its original state or a more desirable one after being disturbed. This concept has since evolved into a more dynamic and proactive construct. A more refined definition proposes SCR as the dynamic ability to anticipate, absorb, adapt to, and recover from disruptive events while maintaining continuity and competitive advantage. Katsaliaki, Galetsi and Kumar (2022) similarly define it as the adaptive capability of the supply chain to prepare for unexpected events, respond to disruptions, and recover from them in a timely and cost-effective manner.

This focus on resilience marks a strategic pivot from traditional supply chain management, which emphasized lean practices and just-in-time delivery to optimize efficiency (Kelka, 2024). While effective in stable conditions, such approaches often lack the flexibility or buffers needed to absorb shocks from events like natural disasters, pandemics, or geopolitical tensions. In the construction industry, which is characterized by complex, fragmented, and often temporary supply networks, this vulnerability is magnified (Ekanayake, Shen, Kumaraswamy and Owusu, 2022). A resilient supply chain must therefore not only recover its initial form but also prove capable of achieving steady, sustainable performance in the face of uncertainty (El Korchi, 2022). Scholars have identified several critical enablers for building this capability, including flexibility, redundancy (such as spare capacity and inventory), visibility through real-time monitoring, and collaboration among supply chain partners.

Risk Identification

Risk identification is universally recognized as the foundational step in any systematic risk management process (Meyer & Reniers, 2022). Without properly identified risks, there is nothing to evaluate, control, or manage. Khodabakhshian, Puolitaival and Kestle (2023) provided an early and enduring definition of risk identification as "the process of systematically and continuously identifying, classifying, and assessing the preliminary significance of risks associated with a construction project". This definition highlights that the process must be both methodical and iterative, extending beyond the common practice of merely preparing a primitive checklist of potential risks. The purpose is to find, recognize, and describe risks that might impact an organization's objectives, including both negative threats and positive opportunities (Hillson, 2024).

Effective risk identification requires a rational, systematic method of searching to preclude overlooking hidden risks. Scholars have documented a variety of techniques to facilitate this process (Cinciulescu, 2023). Common methods cited in the literature include brainstorming sessions with key project stakeholders, analysis of historical data from similar projects, and the use of industry checklists, documentation reviews, and expert interviews. Wysocki (2004) emphasizes that risk identification should be an iterative process involving not just the project team but also clients, stakeholders, and even external experts who can provide perspective based on similar experiences (Dugbartey & Kehinde, 2025). The involvement of multiple personnel is critical, as judging the significance of any given risk cannot be effectively delegated to a single person. By identifying risks at an early stage, project management can be adapted to reduce these threats and allocate them to the parties best able to control them.

According to Nygaard (2024), some of the effective risk identification practices include stakeholder engagement, which gathers diverse insights from clients, suppliers, and community members, and SWOT analysis, which helps firms assess internal and external factors impacting their sustainability and strategic objectives. Regular regulatory compliance assessments ensure adherence to environmental laws, while Environmental Impact Assessments (EIA) evaluate potential ecological effects of construction projects. Scenario analysis prepares firms for future uncertainties, and benchmarking against industry leaders fosters continuous improvement. Maintaining a risk register documents identified risks and their mitigation strategies, and analyzing supply chain sustainability practices reveals potential risks in project delivery. Additionally, technology assessments ensure that new innovations align with sustainability goals, and understanding organizational culture helps identify resistance to change. Financial risk assessments navigate funding challenges, while establishing a framework for continuous monitoring ensures that firms remain proactive in adapting to emerging risks. By implementing these comprehensive practices, construction firms can effectively manage strategic risks while promoting sustainability and achieving long-term success.

Operational Efficiency

Operational efficiency is a crucial element in the strategic risk management framework of construction firms, as it enables these organizations to optimize their processes and resource allocation while effectively mitigating risks (Okeke, Bakare, &Achumie, 2024). This concept transcends simple cost-cutting measures; it embodies a firm's capacity to streamline operations, reduce waste, and enhance value creation over time. In the context of construction firms, operational efficiency serves as a vital indicator of their ability to sustain themselves in a competitive market while addressing the unique challenges of project delivery and client expectations. Central to achieving operational efficiency within the realm of strategic risk management is the alignment of

construction processes with overall business objectives. This alignment ensures that resources are utilized effectively to deliver value to clients while minimizing risks associated with project delays, cost overruns, and regulatory compliance (Deng, Qiao, Yao, Chen, and Tang, 2022). A sustainable operational model in construction is one that maintains consistent performance, thereby reducing the likelihood of disruptions and inefficiencies that can threaten financial viability.

Research indicates that operational efficiency is achieved when construction firms streamline their processes to meet client expectations while maintaining quality and adhering to safety standards (Laukkanen & Tura, 2022). This alignment not only secures long-term operational stability but also enhances client satisfaction and loyalty, essential for repeat business in the construction industry. The operational framework is a multifaceted construct composed of various processes, each requiring tailored strategies to optimize performance based on the specific value being delivered to clients. Regular monitoring and analysis of operational metrics are critical for informed decision-making and continuous improvement in risk management practices (Majka, 2024). Therefore, achieving operational efficiency in construction firms necessitates a strategic approach that integrates an understanding of client needs, effective risk management techniques, and the capacity to adapt to changing market dynamics. By focusing on these areas, construction firms can enhance their operational capabilities, thereby supporting their sustainability and long-term success in a challenging industry landscape.

Theoretical Framework

This study is anchored in the Enterprise Risk Management (ERM) Theory, a comprehensive approach that emphasizes the integration of risk management practices across the entire organization. ERM theory proposes that organizations should address all potential risks financial, operational, reputational, environmental, and more within a unified framework rather than managing them in isolation. This holistic approach is particularly pertinent to the construction sector, which is characterized by its vulnerability to numerous and often interconnected risks such as project delays, cost overruns, regulatory compliance issues, and safety concerns. By adopting ERM, construction firms in South-East Nigeria can proactively identify, assess, and mitigate risks, leading to improved resilience and sustainability. The theory suggests that effectively managing risks not only protects the organization from adverse impacts but also enhances its ability to seize opportunities that may arise amidst uncertainty.

The application of ERM in the context of sustainability is pivotal. As construction firms face increasing pressures from stakeholders including clients, communities, and regulators demanding responsible and sustainable practices, a robust ERM framework

allows these firms to align their risk management processes with their sustainability objectives. For instance, through systematic risk identification and evaluation, construction companies can uncover risks related to resource depletion, environmental degradation, and social impacts. Effective risk communication is also a key component of ERM, enabling firms to engage stakeholders in meaningful dialogues about their sustainability practices and risk management strategies. This transparency builds trust and ensures that stakeholder concerns are addressed, which is essential for maintaining the social license to operate, especially in a region where insecurity can exacerbate operational challenges.

ERM Theory underscores the importance of continuous monitoring and compliance as part of a dynamic risk management culture. In South-East Nigeria, where the construction industry is influenced by fluctuating economic conditions and regulatory changes, maintaining compliance with legal and environmental standards is crucial. The ERM framework promotes an ongoing assessment of the risk landscape, allowing firms to adapt their strategies in response to emerging threats and opportunities. By cultivating a culture of risk awareness and preparedness among employees, firms can enhance their operational efficiency and quality management practices. Overall, this comprehensive approach offers construction firms a pathway to navigate the complexities of their environment, ensuring not only their survival but also their contribution to sustainable development in the region.

Empirical Review

Achebo (2025) investigated the factors that influence the resilience of hospitality-based supply chains in Nigeria, particularly during crises. The primary objectives were to identify significant supply chain resilience factors and examine how relational competencies, organizational readiness, and cross-sector collaboration contribute to the sector's ability to withstand shocks. The study utilized Structured Equation Modeling (SEM) with a purposeful sampling strategy, collecting primary data from a sample of 50 supply chain decision-makers from four- and five-star hotels in Lagos, Nigeria, through a structured Likert-scale questionnaire. The results indicated that demand forecasting and strategic/dual sourcing are key drivers of supply chain resilience. The path coefficient for the relationship between demand forecasting and supply chain resilience was 0.359, and for strategic and dual sourcing, it was 0.361, both showing significant positive relationships. However, the impact of technology integration was found to be insignificant, with a path coefficient of 0.148. The study concluded that integrated crisis-management strategies, structured contingency planning, and collaborative network improvements are vital for building resilience in Nigeria's hospitality sector, while low levels of awareness and unsound crisis management strategies currently constrain it**.**

Erakpotobo and Okei (2022) studied the mitigating effect of supply chain risk management in marginal field oil and gas companies in Nigeria. The specific objectives were to determine the influence of transportation, information, demand, and monitoring risk mitigation strategies on business operations. This field survey research collected data from a sample of 325 management and senior staff selected from a population of 687 across nine marginal field oil and gas companies, using convenience and purposive sampling techniques. A questionnaire was the main instrument for data collection, and the analysis was done using descriptive statistics. The findings showed that respondents strongly agreed that various risk mitigation strategies were effective. For transportation risk mitigation, the mean score was 4.45; for information risk mitigation, it was 3.86; for demand risk mitigation, it was 4.06; for monitoring risk mitigation, it was 4.07; and for supply risk mitigation, it was 4.02. The study concluded that the proper application and management of supply, demand, information, transportation, and monitoring risk mitigation strategies are critical factors in reducing risks and ensuring smooth operations in the marginal field oil and gas sector in Nigeria.

Mairura and Muturi (2021) carried out a study on the effect of supply chain resilience strategies on the operational performance of manufacturing firms in Nairobi City County, Kenya. The main objective was to determine the role of four specific strategies—Multisourcing, Nearshoring, Product Harmonization, and Inventory Management—on performance. The methodology involved a cross-sectional survey design, collecting primary data via questionnaires from a sample of 130 respondents from the 454 manufacturing firms in the region, selected using a simple stratified random sampling technique. The data was analyzed using descriptive and inferential statistics. The findings indicated that the resilience strategies jointly explained 66.3% of the variation in operational performance ($R^2 = 0.663$). The regression analysis showed that all four strategies had a significant positive effect on operational performance: Multisourcing ($\beta = 1.06$, $p<0.05$), Nearshoring ($\beta = 1.02$, $p<0.05$), Product Harmonization ($\beta = 0.41$, $p<0.05$), and Inventory Management ($\beta = 0.075$, $p<0.05$). They concluded that to improve operational performance, manufacturing firms should adopt supply chain resilience strategies and advance their supply chain risk management practices as mitigation measures against disruptions.

Onwubuya and Odogwu (2023) ascertained the influence of risk assessment procedures on the financial performance of Small and Medium-Scale Enterprises (SMEs) in Anambra State, Nigeria. The objective was to determine the effect of risk identification and risk analysis on SME financial success. Using a correlational research design, the study surveyed a sample of 868 SME managers, selected through a stratified sampling strategy, with 682 valid responses used for analysis. Data was gathered via questionnaires and analyzed using Pearson's Product Moment Correlation and Multiple

Regression. The results showed a high positive correlation between risk identification practices and financial performance, with a Pearson's coefficient of r = 0.71. An even stronger positive correlation was found between risk analysis practices and financial performance, with r = 0.82. The multiple regression analysis confirmed a significant relationship between the overall risk assessment practices and financial performance, yielding an F-value of 7.82 and a p-value of 0.000. They concluded that risk assessment practices positively influence the financial performance of SMEs, and therefore, managers should develop and implement risk assessment frameworks tailored to their business size and financial capacity to enhance performance.

Oyekunle (2024) conducted a study on risk management practices in the Nigerian construction sector and their impact on project performance, surveying 85 construction professionals. The research adopted a quantitative survey method using a questionnaire with a five-point Likert scale, distributed via the JISC online platform, employing random and purposeful sampling. The objective was to examine the relationship between risk management, specifically risk identification, and project performance metrics like cost, schedule, and quality. The findings revealed a significant positive impact of risk identification on project performance. Specifically, risk identification had the highest impact on the quality of delivery (Mean = 4.40, RII = 0.880), followed by the schedule (Mean = 4.33, RII = 0.866), and cost (Mean = 4.29, RII = 0.858). A univariate test confirmed a highly significant relationship between the effectiveness of risk identification and the capacity to adhere to project delivery quality (p = .000), adherence to technical specifications (p = .007), and alignment with planned budgets (p = .008). The study concluded that effective risk management practices, particularly thorough risk identification, are crucial for mitigating project failures and significantly enhancing the overall success of construction projects in Nigeria in terms of cost, schedule, and quality.

Banjo and Akosile (2022) examined how the organizational efficiency of the manufacturing sector in Nigeria can be enhanced through proper risk management techniques and the resultant effect on Nigeria's economic growth. The specific objectives were to ascertain the impact of risk identification and risk assessment on organizational efficiency, and how risk management and organizational efficiency jointly affect the Gross Domestic Product (GDP). The study used a survey research design with a sample size of 178 top executive personnel from 20 manufacturing firms listed on the Nigerian Stock Exchange, selected using the Taro Yamane formula. Primary data was collected via a structured questionnaire and analyzed using Hierarchical Regression Methods at a 5% significance level. The findings indicated that risk identification has a significant effect on organizational efficiency, accounting for 82.7% of the variance (R-Square = 0.684, F=42.844, p<0.000). Risk assessment also had a significant positive impact on organizational efficiency (Beta=0.524, t=6.600,

p<0.000), explaining 50.5% of the variance. Furthermore, the study found that risk management and organizational efficiency have a significant positive impact on GDP. The study concluded that efficient risk management programs are crucial determinants of organizational productivity, financial growth, and overall economic growth in Nigeria's manufacturing sector.

Methodology

The population for this study comprises of registered construction firms operating within the five states of South-East Nigeria. The inclusion criteria for participation are firms that have been in continuous operation for a minimum of five years and are classified as large-scale contractors. Firms that are newly established (less than five years) or classified as small-scale contractors will be excluded from the study to ensure that the selected organizations possess sufficient experience with long-term strategic planning, risk management, and sustainability initiatives. The target population for this study consists of 25 selected major construction firms identified as meeting these criteria, in South-East, Nigeria with a total management staff count of 2,505. These selected firms are detailed in Table 1:

Table 1: Selected Construction Firms for the Study

S/N	Construction Firm	Address	Management Staff
1	Alinco-Joe Building Construction	Abia State	37
2	Big E Construction Company	Abia State	59
3	Naupan Engineering Ltd	Abia State	113
4	Lewex Construction Limited	Abia State	71
5	Blessed Offor Construction Company Nigeria Limited	Abia State	43
6	Chifeco Diamond Construction Company Limited	Anambra State	87
7	Gescheit Konstruktion Consult Ltd	Anambra State	129
8	Samwood Construction Companies	Anambra State	93
9	Conifer Konstruktion (Nig) Ltd	Anambra State	101
10	Bonitas Construction Limited	Anambra State	63
11	Midmac Construction Company	Enugu State	157
12	Stancrete Solutions	Enugu State	19
13	Cento Engineering Ventures	Enugu State	21
14	Deevinco Aluminium Roofing Contractors	Enugu State	53
15	Sailglobe Resource Ltd	Enugu State	91
16	Hermes Paving Stones and Concrete Ltd	Imo State	137
17	Tangent Limited	Imo State	79
18	Trekschen Engineers	Imo State	143

19	B'entoy Nigeria Limited	Imo State	161
20	CMA Architecture and Building Construction Services	Imo State	83
21	Benco De Light Ltd	Ebonyi State	107
22	Franchuk Engineering Consultz Ltd	Ebonyi State	179
23	Reinforced Global Resources Ltd	Ebonyi State	99
24	Skygrid Construction Nigeria Limited	Ebonyi State	183
25	B And B Investments Limited	Ebonyi State	197
Total			**2505**

Source: Field Survey. (2025)

Given that the total study population is 2,505 management staff, the sample size was determined using the Taro Yamane formula at a 95% confidence level with a 5% margin of error. The formula and workings are stated below:

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

Where N = population
e = 0.05

$$n = \frac{2{,}505}{1 + 2505\ (0.05)^2}$$

$$n = \frac{2{,}505}{1 + 2505\ (0.0025)}$$

$$n = \frac{2{,}505}{1 + 6.2625}$$

$$n = \frac{2{,}505}{7.2625}$$

$$n\ =\ 344.922$$

Thus, the minimum required sample size for a 5% margin of error and a finite population of 2,505 is approximately 345 respondents. The Study makes use of Bowley's Proportion method to calculate the distribution of questionnaire using the formula below:

$$nh = \frac{n\ x\ Nh}{N}$$

N= Sample Size
nh= Number of questionnaires to be administered.
N= Total Population of Study
Nh= Total Population in each category

Table 2 shows the distribution of questionnaires for each firm.

Table 2: Proposed Questionnaire Distribution for Selected Construction Firms

S/N	Construction Firm	Management Staff
1	Alinco-Joe Building Construction	5
2	Big E Construction Company	8
3	Naupan Engineering Ltd	16
4	Lewex Construction Limited	10
5	Blessed Offor Construction Company Nigeria Limited	6
6	Chifeco Diamond Construction Company Limited	12
7	Gescheit Konstruktion Consult Ltd	15
8	Samwood Construction Companies	13
9	Conifer Konstruktion (Nig) Ltd	14
10	Bonitas Construction Limited	9
11	Midmac Construction Company	22
12	Stancrete Solutions	3
13	Cento Engineering Ventures	3
14	Deevinco Aluminium Roofing Contractors	7
15	Sailglobe Resource Ltd	13
16	Hermes Paving Stones and Concrete Ltd	19
17	Tangent Limited	11
18	Trekschen Engineers	20
19	B'entoy Nigeria Limited	22
20	CMA Architecture and Building Construction Services	11
21	Benco De Light Ltd	15
22	Franchuk Engineering Consultz Ltd	25
23	Reinforced Global Resources Ltd	14
24	Skygrid Construction Nigeria Limited	25
25	B And B Investments Limited	27
Total		**345**

This study adopted a hybrid method for data collection to maximize reach and accommodate participant preferences. The primary instrument for data collection was structured questionnaire. This questionnaire was administered through two channels: physical, face-to-face distribution for participants who are easily accessible on-site, and a digital version created using Google Forms for those who prefer an online format or are geographically dispersed. This dual approach is designed to enhance the response rate and ensure efficient data gathering from the selected sample.

The data collected for this study was analyzed using both descriptive and inferential statistics with the aid of the Statistical Package for the Social Sciences (SPSS) version 27.0. Descriptive statistics, such as frequencies, percentages, mean, and standard deviation, was used to summarize the demographic characteristics of the respondents and the main features of the variables. To test the research hypotheses, inferential statistics, specifically simple linear regression analysis, was be employed to determine the effect of the independent variables (strategic risk management practices) on the dependent variables (dimensions of sustainability).
Degree of Freedom (df) = n-2

Decision Rule

The decision in the analysis section is determined by the average of the responses of respondents. Strongly Agreed (5 points), Agreed (4 points), Disagreed (3 points), Strongly Disagreed (2 points) and Undecided (1 point). The average of the responses: ((5 + 4 + 3 + 2 + 1))/5=3.0. Therefore, a mean score below 3.0 would be considered rejected and a mean score of 3.0 and above would be considered accepted.

Results and Analysis

Table 3: Effect of Risk Monitoring on Supply Chain Resilience

S/N	Items	N	Mean	SD	Remark
Risk Monitoring					
1	Our firm has formal procedures to continuously track and review identified supply chain risks.	313	3.84	0.991	Accepted
2	We use specific mechanisms (e.g., software, regular reports) to monitor potential disruptions from suppliers.	313	3.46	1.088	Accepted
3	The effectiveness of our supply chain risk mitigation strategies is regularly evaluated.	313	2.93	1.157	Rejected
4	We actively scan for new or changing threats in our supply chain environment (e.g., political instability, new regulations).	313	2.81	1.203	Rejected
Supply Chain Resilience					
5	Our supply chain can quickly recover from disruptions in the flow of materials and equipment.	313	3.51	1.077	Accepted
6	We can adapt to sudden changes in material availability or pricing without significant project delays.	313	3.19	1.141	Accepted
7	Our firm maintains operational continuity even when faced with unexpected supplier issues.	313	3.28	1.119	Accepted
8	We have strong relationships with our	313	3.91	0.963	Accepted

	suppliers that help us withstand supply chain shocks.				
Grand Mean		**313**	**3.37**	**1.092**	**Accepted**

Source: *Field Survey, 2025*

The analysis in Table 3 shows that respondents generally agreed on the presence and positive outcomes of risk monitoring systems. Based on the decision rule, Items 1, 2, 5, 6, 7, and 8 were accepted, with mean scores ranging from 3.19 to 3.91. These items indicated that firms have formal tracking procedures and can maintain operational continuity. However, respondents rejected Item 3 (Mean = 2.93) and Item 4 (Mean = 2.81), suggesting a perceived weakness in the regular evaluation of mitigation strategies and active scanning for new threats. Despite these rejections, the overall Grand Mean of 3.37 was accepted, indicating a generally positive, though not perfect, perception of the effect of risk monitoring on supply chain resilience.

Research Question 2: What is the effect of risk identification on the operational efficiency sustainability of construction firms in South-East Nigeria?

Table4 Effect of Risk Identification on Operational Efficiency Sustainability

S/N	Items	N	Mean	SD	Remark
Risk Identification					
1	Our firm uses structured methods (e.g., brainstorming, SWOT analysis) to identify risks to our revenue.	313	3.76	1.012	Accepted
2	We proactively identify potential financial risks before bidding for new projects.	313	3.53	1.101	Accepted
3	Historical data from past projects is analyzed to identify recurring risks that could impact profitability.	313	3.11	1.177	Accepted
4	We document and classify potential risks that could affect our ability to secure a steady stream of projects.	313	3.49	1.054	Accepted
Operational Efficiency Sustainability					
5	Our company consistently secures profitable projects year after year.	313	2.88	1.219	Rejected
6	We are able to maintain stable and predictable income streams over time.	313	2.73	1.254	Rejected
7	Our revenue is not subject to severe fluctuations that threaten our financial viability.	313	2.61	1.288	Rejected
8	Identifying financial risks early has helped us achieve consistent revenue growth.	313	3.03	1.196	Accepted
Grand Mean		**313**	**3.14**	**1.163**	**Accepted**

Source: *Field Survey, 2025*

Table 4 presents a mixed view on the effect of risk identification practices. A majority of the items related to the process of risk identification (Items 1, 2, 3, 4, and 8) were accepted, with mean scores ranging from 3.03 to 3.76. This indicates that firms employ structured methods to identify and document financial risks. However, all items related to the outcomes of operational efficiency (Items 5, 6, and 7) were rejected, with low mean scores of 2.88, 2.73, and 2.61, respectively. This suggests that while risk identification processes are in place, they have not translated into consistent profitability or stable income streams. Nevertheless, the Grand Mean of 3.14 was accepted, showing an overall positive perception of the practices themselves.

Hypothesis One

H_{o1}: Risk monitoring has no significant effect on the supply chain resilience of construction firms in South-East Nigeria.

H_{i1}: Risk monitoring has a significant effect on the supply chain resilience of construction firms in South-East Nigeria.

Table 5: Regression Analysis of Risk Monitoring and Supply Chain Resilience

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.461[a]	.213	.210	.88134

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65.213	1	65.213	83.941	.024[b]
	Residual	241.591	311	.777		
	Total	306.804	312			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.489	.206		7.228	.000
	Risk Monitoring	.548	.060	.461	9.162	.024

Source: *SPSS Output, 2025*

The linear regression analysis was conducted to test the effect of risk monitoring on supply chain resilience. The results indicate a statistically significant relationship between the two variables ($F(1, 311) = 83.941$, $p = .024$). The R-squared value of .213 suggests that risk monitoring practices explain 21.3% of the variance in supply chain

resilience. Since the p-value of .024 is less than the 0.05 significance level, the null hypothesis (H_{01}) is rejected.

Hypothesis Two

H_{o2}: Risk identification has no significant effect on the operational efficiency sustainability of construction firms in South-East Nigeria.

H_{i2}: Risk identification has a significant effect on the operational efficiency sustainability of construction firms in South-East Nigeria.

Table 6: Regression Analysis of Risk Identification and Operational Efficiency Sustainability

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.435[a]	.189	.186	.95521

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65.981	1	65.981	72.316	.031[b]
	Residual	283.699	311	.912		
	Total	349.680	312			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.226	.231		5.307	.000
	Risk Identification	.482	.057	.435	8.504	.031

Source: *SPSS Output, 2025*

The analysis for the second hypothesis shows a significant effect of risk identification on operational efficiency sustainability ($F(1, 311) = 72.316$, $p = .031$). The model indicates that risk identification practices account for 18.9% of the variability in operational efficiency sustainability ($R^2 = .189$). As the significance value ($p = .031$) is below the $\alpha = 0.05$ threshold, the null hypothesis (H_{02}) is rejected.

Discussion of Finding

The study found that risk monitoring has a significant positive effect on the supply chain resilience of construction firms in South-East Nigeria. This outcome is likely because the construction industry is exceptionally dependent on a network of external stakeholders, such as suppliers and subcontractors, whose reliability is paramount. In

the volatile economic environment of the region, characterized by price fluctuations and logistical challenges, continuous monitoring allows firms to anticipate disruptions and proactively manage these critical stakeholder relationships, which is a core tenet of Stakeholder Theory. Tracking risks allows firms to maintain operational continuity and adapt to shocks, thereby enhancing resilience. This result aligns with the findings of Achebo (2025), who identified strategic sourcing and forecasting as key drivers of supply chain resilience. It also corroborates the conclusion of Erakpotobo and Okei (2022), who determined that monitoring supply and transportation risks is critical for smooth operations in Nigeria's energy sector. Similarly, Mairura and Muturi (2021) found that resilience strategies stemming from risk awareness improve performance, reinforcing the importance of a vigilant monitoring system.

The second hypothesis, which proposed a significant relationship between risk identification and operational efficiency sustainability, was also supported. The probable reason for this is that proactive risk identification enables firms to manage threats to their revenue streams and project timelines before they escalate. Identifying financial and operational risks early allows firms to better satisfy the expectations of financial stakeholders (investors, clients) and internal stakeholders (employees), leading to more stable and predictable project execution and profitability. This finding is consistent with previous research. For instance, Onwubuya and Odogwu (2023) confirmed that risk identification practices positively influence the financial performance of SMEs in Anambra State. The result also resonates with the work of Oyekunle (2024), who concluded that effective risk identification is crucial for enhancing project success in terms of cost and schedule adherence within the Nigerian construction sector. Furthermore, the findings of Banjo and Akosile (2022) in the manufacturing sector similarly showed that risk identification significantly improves organizational efficiency, suggesting this principle holds true across different industries in Nigeria.

Conclusion and Recommendations

From the findings, then study concludes that strategic risk management is an indispensable driver of long-term sustainability for construction firms operating in South-East Nigeria. The findings demonstrate that a holistic approach, which integrates proactive risk monitoring, and identification, is fundamental to building a resilient, efficient, and reputable business model capable of navigating the region's complex operational landscape and ensuring lasting success and therefore, recommended that:

i. Firm leaders need to invest in developing and implementing a formal, enterprise-wide Strategic Risk Management (SRM) framework that integrates all five key practices to move beyond project-level firefighting towards long-term strategic resilience.
ii. Policymakers need to create clear incentives, such as tax credits or preferential

bidding status, for construction firms that can demonstrate robust SRM systems and strong adherence to sustainability standards.

References

Achebo, N. (2025). Enhancing supply chain resilience in the Nigerian hospitality industry. *International Journal of Research and Innovation in Social Science (IJRISS)*, 9(7). https://dx.doi.org/10.47772/IJRISS.2025.90700018

Amechi F. A, Ndidiamaka, J. O., Anthonia N. O.(2023) Strategic outsourcing and corporate performance of quoted insurance firms in Nigeria. *International Journal of Financial, Accounting, and Management*, 5(1), 19-33

Anoke, Osita, Okafor, Nzewi (2022) Strategic entrepreneurship alliance and sustainable growth of small businesses in Nigeria. *Global Journal of Management and Business Research* (7), 13-19

Anyaegbunam, C. E., and Anekwe, E. A. (2022). Security strategies for enhancing business sustainability in Anambra state. *African Journal of Business and Economic Development*| ISSN, 2782, 7658.

Banjo, K. A., and Akosile, O. I. (2022). Risk management techniques as a tool to improve organisational efficiency of manufacturing industries in Nigeria. *UNILAG Journal of Business*, 8(1), 85-101.

Erakpotobo, V. O., and Okoi, J. O. O. (2022). The mitigating effect of supply chain risk management in marginal field oil and gas companies in Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS)*, 6(2), 520-525.

Mairura, L., and Muturi, W. (2021). Effect of supply chain resilience strategies on operational performance of manufacturing firms in Nairobi City County, Kenya. *International Journal of Social Science and Humanities Research*, 9(3), 530-551.

Okoye, P. U., Okolie, K. C., and Odesola, I. A. (2022). Risks of implementing sustainable construction practices in the Nigerian building industry. *Construction Economics and Building*, 22(1), 21-46. https://doi.org/10.5130/AJCEB.v22i1.7420

Onwubuya, U. N., and Odogwu, I. C. (2023). Effect of risk assessment practices on the financial performance of small and medium scale enterprises (SMEs) in Anambra State. *International Journal of Education and Evaluation*, 9(6), 41–50.

Oyekunle, O. (2024). Risk management practices in Nigeria construction sector and impact on project performance. *Journal of Science and Technology*, 5(2). https://doi.org/10.55662/JST.2024.5204

Safari, A., and Saleh, A. S. (2020). Key determinants of SMEs' export performance: a

resource-based view and contingency theory approach using potential mediators. *Journal of Business and Industrial Marketing*, 35(4), 635-654.