



RISK FINANCING TECHNIQUES AND PROJECT SUCCESS AMONG BUILDING CONSTRUCTION FIRMS IN LAGOS STATE, NIGERIA.

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Abstract

The construction industry is veritable sectors of nation's economy that assist in the provision of infrastructural development and its activities have positive effects on every other sector of the economy. This study examines the relationship between risk transfer and retentions strategies, cash flows management and building project outcomes in the construction industry. Systematic literature review method was adopted to identify and evaluate relevant articles about risk financing in project management within the construction industry. The study adopts cross sectional and survey research design. Purposive sampling method was adopted while questionnaire was used to harvest the relevant data. Correlation coefficient from ANOVA method of analysis was used to test the robustness of risk transfer and retentions strategies, cash flows management and building project outcomes in the construction industry in Lagos State. The study shows a positive correlation value of 0.893 between risk transfer and retention strategies and project success while a low positive correlation value of 0.117 between cash flow management and building projects. This low correlation attests to poor cash flows management in the construction industry. The research emphasizes the need for regulatory oversight and stakeholder collaboration in enhancing risk management practices. This is because an optimal risk management would mitigate poor cash flow management and other risk that may affect the operational activities of construction firms in Nigeria. This study recommends management frameworks to enhance the resilience and sustainability of construction projects in Nigeria.

Keywords: Nigerian Construction Industry, Risk Financing, Risk Management, Project Success

1.0 Introduction

Strong infrastructure development, which mostly depends on the experience of reliable construction companies, is essential to the existence of nations aiming to create a modern environment (Youneszadeh et al., 2020). By supplying the fundamental components that enable the sustainable growth of human life and establish surroundings that promote high-quality living, these construction firms are essential to every contemporary economy. Risk financing is essential to the effective completion of construction projects since the availability and scarcity of funds have a direct impact on the sector's overall performance. Since risk financing is necessary to protect the structural and financial integrity of construction companies, it has a significant impact on a company's future.

Construction projects have risky processes that can be improved by recognizing and controlling these risks (Edward et al., 2019). Organizations usually develop decision-making techniques that are in line with their goals when reducing project threats. Making wise decisions requires matching relevant tactics to different natural conditions and expected results. Uncertainties or dangers outside of project organizations are included in states of nature. The need to protect investment budgets and enable wise decision-making in the face of financial risks is closely linked to the states of nature assumption (Okereke et al., 2022; Oladigbolu et al., 2022). Risks associated with construction projects can originate from a number of areas, including managerial, financial, sociopolitical, legal, environmental, and technological considerations. The inability to achieve operational objectives and quality standards, as well as the failure to finish projects within the allocated timeframe and predicted budget, are important outcomes of such risks in the field of project management (Akinshipe et al., 2022).

When owners or developers lack adequate equity or loan capacity, project finance becomes necessary due to the inherent complexity and uncertainties involved in financing large-scale building projects (Dotson, 2016). Financial institutions' development of risk-related lending in recent years has become a key driver of economic growth in emerging and developing countries. In the literature on finance, risk and its consequences are crucial concepts that have both theoretical and empirical significance in influencing the discussion of important policy issues. Preventing negative outcomes, especially those that lead to insolvency, is the key to risk management (Cretu et al., 2011).

The ability to plan and execute large, frequently complex construction projects on schedule, within budget, and in compliance with performance standards are just a few of the factors that make up project success, which is essential to business success. Risky projects are viewed as opportunities by traditional financiers, and stakeholder risk sharing is necessary for shared profits (Finnerty, 2013). The owners demanded that the project's risks were crucial since they would determine their capacity to recoup their investment and make money (Enshassi & Mosa, 2015).

Effective risk management techniques, such as different risk financing mechanisms including insurance, surety bonds, and captive insurance, are essential for reducing financial uncertainty and guaranteeing project success in the construction sector. In 2022, Akinshipe et al. However, there is a significant study gap regarding the thorough comprehension of how various risk financing strategies affect important project outcomes, such as cost control, schedule adherence, and overall quality assurance. Additionally, insurance is the last option in Nigeria, where risk is high in the construction sector and risk mitigation strategies are insufficient. Insurance caps the gaps that require risk, transfers risk correctly, and implements retention

methods. Also, insurance ensures that poor cash flows management in the construction industry are appropriately managed through the setup of various risk financing mechanisms.

In order to give a thorough overview of the most recent developments in risk financing strategies for construction projects, this study combines and analyzes relevant literature to investigate the relationship between risk financing strategies and project outcomes, with a particular focus on the viewpoints of construction firms.

2.0 Literature Review

Portfolio theory and empirical literatures were used to examine risk financing techniques and project success among building construction firms in Lagos state.

The focus of this study is on the role of risk financing techniques on project success among building construction firms. Modern Portfolio Theory (MPT) postulated by Markowitz (1991) was used to aid the understanding of how effective risk financing strategies could bring about improved successful project outcomes. The crux of the position being canvassed by the study is that based on MPT's assumption concerning diversification and maximum risk-return trade-offs, construction companies in Lagos Nigeria could structure their financial portfolios by deploying project funding strategies that would bring about successful project undertakings

Kumar, (2018) and Mangram (2013) were some of the researchers that stated that supported the Harry Markowitz Modern Portfolio Theory (MPT) of 1952. These researchers integrate the MPT assumptions concerning diversification and maximum risk-return trade-offs to examine the success and failure of firms in the construction industry. Furthermore, researchers such as Jongman et. al (2014); Picard & Pinquet, (2013); Mutenga & Staikouras, (2007) were of the opinion that the MPT is suitable to examine risk and return in any field of study admitting the criticism of the theory.

Nevertheless, within the context of insurance and risk management, construction companies can deploy MPT's principles such as diversified insurance portfolios to balance the financial exposure risks leading optimal returns or successful projects (Boasson, et. al 2012). Consequently, the study posits that in risk financing, constructions companies in Lagos State Nigeria can rely on assumptions of MPT to achieve optimal allocation of scarce financial resources to mitigate potential project investment losses leading to a balance between risk and return.

Aduloju and Oluwaleye (2023), risk financing is part of the broader concept of risk management. In accordance with the study's conceptualisation, risk financing at its core addresses the nagging problem of aligning an organisation's ability to take risks with its willingness to take risks. Consequently, within the framework of risk financing, an organisation involved in a construction project can (for instance) sustain its financial stability by transferring the financial risks of its involvement to external parties by taking up insurance on such a project. Similarly, Oko-osi, et. al (2023), conceptualise risk financing as the process of the identification, assessment, and management of an organisation's financial exposure in sponsoring a project through insurance, self-insurance, and hedging.

In a related development, studies such as Alsyahrin et. al (2018), Fava and Vrieling (2021), Ipigansi and Ajemunigbohun (2023) and Liu and Huang (2022) conceptualise risk financing as a vehicle for both risk pooling and risk sharing that utilise legally recognised financial institutional mechanisms in a polity such as insurance to achieve a better financial spread and cost efficiency of undertaking a project. Additionally, other studies such as Alsyahrin, et. al. (2018), Budiano (2023) and Soetanto *et al.* (2020), conceptualise risk financing as a strategic instrument in risk management that organisations utilise to ensure their sustainability by ensuring that the financial expenses on a particular project are outweighed by the resultant financial benefits.

The notion of risk financing techniques has been used interchangeably in extant literature (e.g. Aduloju & Oluwaleye, 2023; Aduloju & Akindipe, 2022; Ipigansi & Ajemunigbohun, 2023; Soetanto *et al.*, 2020) as risk financing strategy, risk financing option and risk financing arrangements to imply the part of a broader risk management framework that comprises identification, evaluation, mitigation, and transfer of an organisation's financial exposures as a result of undertaking a project. Consequently, these studies (Aduloju & Oluwaleye, 2023; Aduloju & Akindipe, 2022; Ipigansi & Ajemunigbohun, 2023; Soetanto *et al.*, 2020) attempt to distinguish between risk retention and risk transfer as risk financing strategies. In particular, risk retention involves an organisation shouldering the full financial responsibility for embarking on a project by ensuring that its financial exposure or financial expenses are outweighed by the financial gains. In similar vein, transferring of financial risks involves a voluntary, strictly defined and contractually backed shifting of financial risks to a third party such as the arrangement between insurers and policyholders over a project (Ipigansi & Ajemunigbohun, 2023).

Additionally, the studies by Alsyahrin *et al.* (2018), Fava and Vrieling (2021), and Liu and Huang (2022) conceptualise risk financing techniques as the mechanism deployed by companies to manage and transfer their exposures to financial risks. According to these studies (Alsyahrin *et al.*, 2018; Fava & Vrieling, 2021; Liu & Huang, 2022), the techniques of risk financing involving for example risk retention and risk transfer can be obtained by financially risk compliant organisations via opportunity such as insurance, reinsurance and self-insurance. In a related development, Budianto (2023) and Soetano *et al.* (2020) conceptualise risk financing techniques as mechanisms deployed by organisations to hedge against their exposure to financial risks by solely or combining mechanisms such as risk retention, risk pooling, risk transfer, securitization, and risk mitigation on the basis of an organisation's appetite for risks as well as financial capacity. According to extant literature (Ali *et. al* 2024; Wuni & Shen, 2020), project success is achieved in the construction industry when the focal project is completed to the level of the client's quality expectations on time and within the proposed budget. Similarly, Youneszadeh *et. al* (2020) study of the construction industry conceptualises project success as delivering on the mandate to the expectations and satisfaction of stakeholders within the stipulated project lifecycle.

In a related development, extant studies (Bhatti *et. al* 2021; Khalifeh *et. al* 2020) construe project success as the achievement of a balance between interwoven factors in a given project mandate in terms of scope, quality, schedule and finances. Additionally, the study by Tam *et. al* (2020) implies that project success encompasses the utilisation of effective risk management techniques in organisations to adapt to project circumstances such as the scope, quality, schedule and finances to bring a project to fruition while satisfying the expectations of the client and other stakeholders.

Insurance serves as a critical risk financing mechanism within the construction industry by providing financial protection against potential losses or damages incurred during project execution (Owusu-Manu, *et. al.* 2021). By transferring risks to insurance providers, construction firms can mitigate the financial impact of unforeseen events such as accidents, natural disasters, or material defects. This facilitates smoother project execution by alleviating concerns over potential liabilities and associated costs. Moreover, insurance coverage instills confidence among stakeholders, including contractors, investors, and clients, thereby enhancing project success through improved risk management and financial stability (Abbas, 2023).

Contractual risk allocation mechanisms, exemplified by indemnity clauses and limitation of liability provisions, serve as pivotal risk financing instruments within the construction industry

(Van-Coile, 2023). As elucidated by empirical investigations, such as the work by Surve, and Delhi (2024), the paramount importance of clear and equitable risk allocation mechanisms cannot be overstated in augmenting project outcomes and mitigating disputes. The study portrays that the efficacy of contractual risk allocation mechanisms significantly influences project success metrics.

Abdul-Rahman et. al (2009) evaluate financial-related factors contributing to construction project delays and identify the root causes and appropriate mitigation measures. Delays in construction projects are a common and costly issue, and the study focuses on financial causes of delays. The paper highlights four primary factors: late payments, poor cash flow management, insufficient financial resources, and financial market instability. Data was collected through preliminary interviews, questionnaires, and structured interviews, yielding 110 responses from various stakeholders, including clients, contractors, consultants, and bankers. The findings reveal that poor cash flow management is the most significant contributor to project delays, followed by late payments, insufficient financial resources, and financial market instability.

The study also identifies underlying causes such as contractors' unstable financial backgrounds, clients' poor financial and business management, challenges in obtaining loans from financiers, and inflation. According to the research, clients play a critical role in mitigating the impact of financial problems on project delays. The study suggests several mitigation strategies, emphasizing the importance of clients managing cash flow effectively to ensure timely payments within the construction industry. The study concludes by calling for further research on how clients can achieve well-managed cash flow to minimize delays caused by financial issues.

Antón et. al (2011) provide an evaluation of the financial risks associated with construction projects, where they identify, categorize, and analyze the primary risks inherent in large-scale construction endeavors. The paper highlights financial risks such as inflation, currency fluctuations, and lack of solvency, as well as several other factors within construction that can impact the project's outcome. These risks stem from the uncertainty affecting the various parties involved in the project and underscore the importance of coordinated team efforts post-project. In their classification, the risks are divided into categories based on existing literature, with certain risks warranting special attention. The most critical risks identified include payments to contractors, contract breaches, poor designs, and financial risks. Payments to contractors are particularly significant; delays or suspension can lead to project disruptions. Additionally, financial risks typically result in monetary loss, which can severely impact the project's success and overall financial stability.

Ugwu et. al (2019) in their research on the evaluation of risk management practices in the Nigerian construction industry states that the construction industry plays a pivotal role in driving economic growth within a nation. However, it is susceptible to various risks that can impede its contribution to the economy. Despite the inherent challenges, these risks cannot be entirely eradicated but can only be effectively managed. Hence, this study seeks to assess the prevailing risk management practices within Nigeria's construction sector.

Aduloju and Akindipe (2022) assess the impact of risk financing strategies on project success among building contractors in Lagos State, Nigeria, with a particular focus on risk transfer and risk retention strategies. The study utilizes a descriptive survey research design and targets a population of all registered builders in Lagos State, totaling 2,422 individuals. A convenience sampling method was applied to select a sample size of 170 respondents. The regression analysis

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revealed a strong positive relationship between risk transfer strategy and project success among building contractors in Lagos State. Williams and Mojekwu (2019) examined credit risk management and performs and found out that risk cut across all sectors and the ability to manage risk increase performance.

Oko-Osi, et al (2023) investigate the relationship between risk financing options and project success within building construction companies in Lagos State, Nigeria. The study uses a cross-sectional survey research design and combines judgmental and convenience sampling techniques. The study population includes sixty-nine registered building construction firms in Lagos State, with a sample size of eighty-seven respondents obtained through structured questionnaires. The analytical approach employed in the study is simple regression, which demonstrates a strong connection between risk financing options and project success among the selected construction firms. Both risk retention and risk transfer options showed positive correlations with project success.

3.0 Methodology

The study adopts a cross sectional and survey research design alongside a systematic literature review. The population was purposively selected. 9 construction firms and one insurance firm operating in Lagos State were purposively selected for the study. The construction firms were selected on the criteria that they currently have property insurance policy in place while the insurance firm was selected based on its capacity to manage building construction risk. 15 senior staff were selected from each firm. These make the study sample size of 150. These staff were selected on the criteria of their experience and skills to provide the researcher with quality information. Questionnaire was used as the research instrument to collect information from the 150 staff using a drop off and pick approach.

The research instrument (questionnaire) consisted of structured (closed end) questions. It was designed to collect data on the risk transfer and retention strategies and cash flows management on project success among building construction firms in Lagos state, Nigeria. The design was based on the research model, and the items contained therein were based on the objectives of the research. The structure of the questionnaire was a five-point Likert scale (Likert, 1961) which ranged from “Strongly Agree” (5) to “Strongly Disagree” (1) for all the focal constructs of the study.

Table 1: Variable Description, Measurement and Data Sources

Variables	Description	Measurement	Data Source
Risk Transfer and Retention Strategies (RTRS)	This describes the risk transfer and retention strategies used in the construction industry in Nigeria.	Using Likert scale	Questionnaire administration.
Cash Flows Management (CFM)	This describes the cash flows management process in the construction industry	Using Likert scale	Questionnaire administration.
Building Construction (BC)	This describes the success or failure of building projects in the construction industry in Nigeria.	Using Likert scale	Questionnaire administration.

Source: Researchers, 2024

Table 2: Summary of Questionnaire Structure

Variables	Questions	Respondents	Valid %
Risk Transfer and Retention Strategies (RTRS)	4	150	100%
Cash Flows Management (CFM)	4	150	100%
Building Construction (BC)	4	150	100%

Source: Field Survey 2024

Table.2 shows that a total of twelve (12) question with 150 respondents in both the construction industry and insurance sector in Nigeria to provide information on risk financing techniques and project success among building construction firms in Lagos state, Nigeria.

3.1 Model Specification

$$BC = \beta_0 + \beta_1 RTRS + \mu_t \tag{1}$$

$$BC = \beta_0 + \beta_1 CFM + \mu_t \tag{2}$$

Where:

BC = Building Construction

(RTRS)= Risk Transfer and Retention Strategies

CFM = Cash Flows Management

Table 3: Reliability Statistics

Measure	No of items	Cronbach's Alpha
Risk Transfer and Retention Strategies	4	0.79
Cash Flows Management (CFM)	4	0.87
Building Construction (BC)	4	0.84

Source: Researcher 2024

As depicted in Table.3, the Alpha values were above 0.70. The data were therefore regarded as reliable for the study analysis.

Table 4: Correlation and the Coefficient of Determination Results

$$BC = \beta_0 + \beta_1RTSR + \mu_t \quad (1)$$

Model Summary of Results									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.893 ^a	.798	.791	.97537	.798	2.814	1	148	.002

a. Predictors: (Constant), RTSR

Table 4. shows the correlation coefficient of 0.893 and the R² value of 79.8%. It means that there is a strong positive correlation of 0.893 between risk transfer and retention strategies and the success of building projects in the construction industry in Nigeria.

Table 5: Correlation and the Coefficient of Determination Results

$$BC = \beta_0 + \beta_1CFM + \mu_t \quad (2)$$

Model Summary of Results									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.117 ^a	.014	.011	.01452	.014	1.995	1	148	.013

a. Predictors: (Constant), CFM

Table 5. shows the correlation coefficient of 0.117. though there is a significant relationship between cash flow management and building construction. It means that there is a weak positive correlation between cash flow management and building projects in the construction industry in Nigeria.

4.0 Discussion of Findings

Several reviews have explored the relationship between risk financing and project success in the Nigerian construction industry, revealing crucial insights into how risk management strategies influence project outcomes. The key findings from these reviews can be summarized as follows:

Research has consistently demonstrated a strong positive correlation between risk financing strategies and project success in the Nigerian construction industry. This study therefore supports the work of Alsyahrin et al. (2018), Fava and Vrieling (2021), Ipigansi and Ajemunigbohun (2023) and Liu and Huang (2022).

Both risk transfer and risk retention strategies have been found to contribute significantly to successful project delivery. Risk transfer strategies, such as insurance and surety bonds, provide contractors with a safety net against unforeseen events. This study supports the work of Aduloju and Oluwaleye (2023). These strategies are particularly beneficial in mitigating financial risks and ensuring project continuity. Risk retention strategies, including self-insurance and contingency funds, enable contractors to handle smaller risks internally. Effective risk retention can lead to greater control over project costs and timelines. Studies have highlighted the need for improved compliance with risk management regulations in the industry, such as the compulsory purchase of builders' liability insurance. Increased regulatory oversight can enhance project stability and protect stakeholders' interests.

While there is awareness of risk financing strategies, challenges in implementation persist. Factors such as poor cash flow management, delays in payments, and insufficient financial resources can hinder the effective use of risk financing options. The reviews emphasize the importance of involving all stakeholders, including clients and regulatory bodies, in risk management processes. This study also supports the work of Williams and Mojekwu (2019) that the ability of a firm to manage cash flow risk increase performance and create success for projects. The study also supports the work of Oko-osi et al (2023); Aduloju and Oluwaleye, (2023); Aduloju and Akindipe, (2022); Ipigansi and Ajemunigbohun, (2023); Soetanto et al., (2020).

Furthermore, collaboration and communication across the industry can lead to more efficient and effective risk mitigation. Researchers have recommended the establishment of risk management departments within construction firms to handle risks more effectively. Building contractors should also work on enhancing their risk retention capacities. Overall, the reviews underline the significant impact of risk financing strategies on project success in the Nigerian construction industry. By adopting effective risk management practices, contractors can navigate risks more efficiently, leading to improved project outcomes and greater industry resilience.

5.0 Conclusion and Recommendation

In conclusion, effective risk financing plays a critical role in the success of construction projects in Nigeria. By employing a combination of risk transfer and risk retention strategies, contractors can mitigate various risks and enhance project outcomes. There is a positive correlation between the use of risk financing options and successful project delivery. Strategies such as insurance and contingency funds can help manage financial risks, thereby contributing to projects being completed on time, within budget, and to the desired quality standards.

Despite the recognized importance of risk financing, there are challenges in implementation such as poor cash flow management, delayed payments, and insufficient financial resources. These challenges can hinder the effective use of risk financing strategies and affect project success. The involvement of all stakeholders in risk management, including clients, contractors, consultants, and regulatory bodies, is crucial for successful project delivery. Collaboration and open communication can lead to more effective risk mitigation and better project outcomes.

Finally, the review underscores the importance of integrating effective risk financing strategies into construction projects to ensure their success. By addressing the challenges in implementation and fostering collaboration among stakeholders, the Nigerian construction industry can achieve better risk management and improved project outcomes.

The study recommends that construction firms should develop and implement comprehensive risk management strategies that include a mix of risk transfer and risk retention methods tailored to the specific needs of each project. Also, building contractors and project managers should receive ongoing training in financial management and risk financing to ensure they are equipped with the knowledge to make informed decisions and effectively manage financial risks.

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