P-ISSN: 2709-6254	Journal of Development and Social Sciences	Oct-Dec 2023, Vol. 4, No. 4
O-ISSN:2709-6262	https://doi.org/10.47205/jdss.2023(4-IV)29	[320-329]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

Studying the Strategies to Manage different Types of Risks related to Construction Projects

[1]Tayyaba Akhtar*, [2]Rizwan Shabbir and [3]Dr. Shahaan Cheema

1. M. Phil. Scholar, Business & Management Sciences, Department of The Superior University, Lahore, Punjab, Pakistan
2. M. Phil. Scholar, Business & Management Sciences, Department of The Superior University, Lahore, Punjab, Pakistan
3. Assistant Professor, Business & Management Sciences, Department of The Superior University, Lahore, Punjab, Pakistan

***Corresponding Author:** Tayyabaakhtat72@gmail.com

ABSTRACT

This research paper explores the strategies used to manage risks in construction projects, focusing on financial, technical, environmental, social, and regulatory aspects. It analyzes existing risk management practices and frameworks in the construction industry, examining their strengths and weaknesses. The study also examines case studies from different project types, scales, and geographic locations to provide lessons and best practices. The findings contribute to a deeper understanding of challenges and opportunities related to risk management in construction projects. By identifying successful strategies and technological advances, stakeholders can improve decision-making processes, project outcomes, and reduce potential negative impacts. The research aims to provide insights and guidance to construction professionals, project managers, and decision-makers to develop robust risk management strategies tailored to different project contexts. By proactively recognizing and addressing risks, construction projects can progress smoothly, ensure sustainable development, and achieve higher overall success

KEYWORDS Challenges and Opportunities, Construction, Project Management, Strategies, Risks

Introduction

Complex construction projects are susceptible to numerous dangers that can threaten their profitability. Risk management is an integral component of project planning and implementation. Its purpose is to identify, evaluate, and effectively mitigate prospective risks. This study investigates the numerous categories of risks in construction projects and the methods used to manage them effectively. There are a variety of construction project-related dangers.

A lack of clarity in the project's scope or a deficient design is a risk. This could increase costs and delays (Olawale & Sun, 2016). Financial concerns can have a significant impact on the viability of an undertaking. Variations in material costs, fluctuations in exchange rates, and funding difficulties are among the risks (Zhang and Perera, 2015). Natural disasters, inclement weather, and environmental regulations, for instance, have the potential to delay project completion (Thomson et al., 2017). Changes in government regulations, permissions, and legal conflicts can all pose significant political and legal obstacles (Bubshait & Abudayeh, 2018). One of the risks that can hinder project performance is the difficulty of implementing and integrating new technologies (Barlish & Sullivan, 2012). Risk management systems employ some techniques to control potential dangers effectively. Identifying hazards is a crucial step that can be accomplished with the help of risk registers, ideation sessions, and historical data analysis (Kumaraswamy and Chan, 2018).

Risk assessment uses qualitative and quantitative methodologies to evaluate identified risks' potential impact and likelihood (Chapman and Ward, 2003). Risk mitigation

entails adopting preventative measures to reduce potential threats. These strategies include risk transfer, contingency planning, and contract provisions (Assaf and Al-Heji, 2006). There are two primary areas in which building project risk management can be enhanced. The first is stakeholder engagement, involving stakeholders in decision-making to foster collaboration and accountability (Aaltonen, 2016). The second area of emphasis is technology integration, particularly using Building Information Modelling (BIM) and other digital technologies to improve risk communication and project coordination (Akintoye et al., 2015).

This study provides significant insight to construction industry professionals by evaluating the numerous hazards that could affect building projects and the methods used to control them. It aims to enhance project performance and produce favorable project outcomes. The purpose of this study is to investigate various methods for effectively managing the numerous risks that are typically associated with construction projects. The scope of this study encompasses a comprehensive examination of the diverse types of hazards commonly encountered in construction projects. These risks include those associated with the project's scope and design and financial, environmental, political, legal, and technological risks. The study examines how industry professionals identify, evaluate, and implement risk-mitigation strategies. This study aims to provide significant insights into enhancing risk management practices in construction projects, resulting in improved project outcomes and higher project success rates.

The study analyzes and evaluates construction professionals' strategies and best practices to manage various risk categories effectively. It aims to investigate the effectiveness and efficiency of risk management solutions in reducing potential hazards and improving project success. The research topics include identifying common hazards in construction projects, addressing scale and design issues, managing financial hazards through fluctuating material costs, exchange rates, and financing issues, minimizing environmental hazards, managing political and legal hazards through policy changes, permit delays, and legal battles, and utilizing technical risk management methodologies to handle integration issues and adopt new technologies. The findings strongly recommend improving construction project risk management practices.

Construction projects are inherently susceptible to a variety of risks that may have a substantial effect on the project's success. Delays, cost overruns, and quality issues are all potential risks. Despite the critical importance of risk management in this industry, the construction industry needs help implementing effective strategies for managing various hazards. This study's objective is to investigate the primary research issue: The construction industry lacks a comprehensive understanding of the most effective and efficient risk management strategies for different categories of construction projects. This ignorance leads to inadequate risk management practices, which hinder the project’s performance. The study will endeavor to identify the numerous types of risks that are commonly encountered on construction sites. In addition, it will evaluate the efficacy of current risk management practices and initiatives in reducing prospective risks. This study aims to resolve this research question by providing valuable insights and suggestions for enhancing risk management practices in the construction industry. This will ultimately result in improved project outcomes and increased project success rates.

This study is essential for the construction industry and project management professionals for several reasons. The research offers valuable insights into effective risk management strategies for construction initiatives. It offers suggestions for enhancing risk management practices by identifying and analyzing various techniques. This can result in better project outcomes and a reduced risk of project failure. The study's findings help construction professionals enhance resource allocation and project schedules, resulting in lower costs and fewer delays due to unanticipated risks. To ensure the accomplishment of a project, it is necessary to employ effective risk management strategies. This enhances the

project's stability, quality, and adherence to budgets and timelines, thereby increasing the likelihood of achieving project objectives. Confidence among Stakeholders: Among project stakeholders, implementing appropriate risk management practices is necessary for establishing trust, fostering positive relationships, and enhancing the industry's reputation. Customers, investors, and government officials are examples of stakeholders.

The importance of research recommendations in advancing risk management practices in the construction industry must be considered. These recommendations contribute to the general improvement of future initiatives by advocating for best practices and encouraging innovation. This study aims to provide construction professionals with valuable insights by comprehensively evaluating methods for controlling the various hazards associated with construction projects. The ultimate objective is to enhance project results and guarantee project success.

Literature Review

Construction projects are notorious for their inherent complexities and unpredictability, which expose them to numerous risks. Effective risk management is essential to the success of a project because it minimizes potential interruptions and ensures adherence to the budget and schedule. This literature review examines recent research on the strategies used to manage the various categories of risks associated with construction projects, with a particular emphasis on risk identification, assessment, and mitigation techniques.

Identifying hazards is the first and most crucial step in the risk management process. Recent research has highlighted the importance of employing various techniques and instruments to identify potential hazards in construction projects. El-Sayegh (2020) emphasized using risk protocols and historical data analysis to identify project-specific risks. In addition, Zayed and Fahmy (2021) highlighted the significance of stakeholder workshops and brainstorming sessions for collecting diverse perspectives and identifying latent threats. Risk assessment accuracy enables stakeholders in construction projects to prioritize hazards and allocate resources appropriately. Al-Azhar and coworkers (2021) examined the integration of qualitative and quantitative risk assessment methodologies. Combining Failure Mode and Effect Analysis (FMEA) and Analytical Hierarchy Process (AHP) enhances risk prioritization and decision-making in construction projects. Project stability and impact minimization need to mitigate identified risks. Recent research has examined a variety of risk mitigation strategies. Combining Building Information Modelling (BIM) and Monte Carlo simulation, Huang et al. (2021) developed a proactive method for managing project risks. Abdelhamid and Everett (2022) emphasized the importance of contractual provisions and risk-sharing procedures in public-private partnership (PPP) building projects to mitigate financial risks in a separate context. The construction industry has progressively adopted technology to enhance its risk management procedures. The research of Chinyio and Olomolaiye (2020) demonstrated the importance of real-time data and Artificial Intelligence (AI) for identifying and monitoring risks in construction projects. They discovered that modern technologies improved the accuracy of risk prediction and allowed them to respond in real-time to potential hazards.

Recent studies have also highlighted the significance of stakeholder participation in effective risk management. Ge and Liu (2021) investigated the effects of collaborative risk management on project performance. According to their findings, integrating all stakeholders from the planning stage fosters a culture of collective risk awareness, resulting in improved project outcomes and fewer risks. Recent research indicates that comprehensive risk identification, accurate risk assessment methodologies, proactive risk mitigation measures, technological integration, and extensive stakeholder engagement are all components of effective construction project risk management. By implementing these strategies, construction industry professionals can improve project resilience and success rates. However, additional research is required to investigate innovative risk management

practices and their effect on project performance in a construction industry that is constantly evolving.

In their study, Wang et al. (2022) examine the incorporation of Building Information Modelling (BIM) and risk management practices in construction projects. The researchers conducted case studies and discovered that BIM visualization facilitates enhanced risk communication and teamwork. Incorporating risk data into the BIM platform aided in the early identification of potential problems, resulting in more proactive risk mitigation strategies and enhanced project outcomes.

Liu et al. (2021) present another study that optimizes resource allocation in construction projects using a risk-based decision support system (DSS). The study employs probabilistic risk assessment methods to evaluate the impact of risks on project goals and costs. Considering risk considerations, the DSS enables project stakeholders to make informed resource allocation decisions, resulting in effective resource utilization and reduced risk exposure.

Khatri et al. (2021) investigated the utility of collaborative risk seminars for enhancing risk management practices in infrastructure development projects. Incorporating key stakeholders such as contractors, clients, and regulatory bodies in risk identification and analysis has increased risk awareness and promoted a proactive approach to risk mitigation. The findings indicate collaborative risk seminars foster a risk-aware culture, improving project outcomes.

This study uses Monte Carlo simulation and fuzzy logic to present a hybrid method for assessing construction project cost and schedule risks. According to the survey, considering uncertainties and imprecise data, the combined approach enables more accurate risk assessment. Hassan et al. (2020) suggest using this strategy to enhance risk assessment and decision-making in project planning and execution.

A study (Wang et al., 2019) proposes an integrated approach to risk management for sustainable building initiatives. Risk management practices incorporate sustainability considerations that address environmental, social, and economic concerns. The study emphasizes the importance of a comprehensive risk management strategy for developing long-term projects. The integrated framework permits project stakeholders to identify and mitigate risks while maintaining long-term development goals.

Recent research provides significant insight into the strategies used to control various construction-related dangers. The findings of this study contribute to the advancement of risk management practices in the construction industry, including technology integration, decision support systems, collaborative seminars, and sustainable risk management frameworks.

Material and Methods

This study employed a qualitative research methodology to comprehensively understand the risk management strategies used in construction projects. Information was gathered through interviews, focus group discussions, and document analysis to investigate diverse perspectives and generate original insights. This study used purposeful sampling to select participants with pertinent knowledge of construction projects and risk management. The interviews and focus groups targeted key stakeholders such as project managers, construction professionals, risk experts, and clients. We conducted interviews in a semi-structured format to obtain individual perspectives on risk management strategies. The interviews delved deeply into the participants' experiences, obstacles, and best practices for efficiently managing diverse categories of risks. We are preparing focus group discussions to promote collaborative conversations among stakeholders and delve into common themes and shared risk management experiences. In addition to interview and focus group data,

project documents, risk registers, and risk management strategies were reviewed using document analysis. The qualitative data collected through interviews, focus group discussions, and document analysis were evaluated using theme analysis. The data were transcribed and coded to identify significant themes and trends about the utilized risk management measures.

The evaluation method included assessing, refining, and categorizing the emergent themes to provide a comprehensive analysis of the risk management strategies. Triangulation ensured the study's validity by accumulating data from multiple sources, including interviews, focus groups, and documents. This technique enhanced the credibility of our findings. We conducted member checks to validate the results with the participants to ensure their accuracy and veracity. Throughout the study, reflexivity was maintained to ensure recognition of the researcher's possible biases and perspectives. All participants provided informed consent before the collection of any data. The study was designed to safeguard the identities and confidentiality of the participants. The study adhered to ethical standards and was sanctioned by the appropriate ethics review commission. While the qualitative research design has limitations on generalizability, its primary objective is to gain an in-depth understanding rather than statistical representativeness. The scope of the study could be restricted to a particular geographic region or type of construction endeavor. Using a qualitative approach, this study seeks to comprehensively comprehend the strategies used to control various types of risks in construction projects. This study's findings will benefit project managers and construction professionals attempting to improve their risk management practices.

Results and Discussion

Table 1
Thematic Analysis

Major Themes	Sub Themes	Initial codes
Risk Identification Strategies	Risk Checklists and Registers Lessons from Previous Projects	➢ Use of risk checklists ➢ Development of risk registers ➢ Learning from past project experiences ➢ Knowledge transfer from similar projects ➢ Collaborative Risk Workshops ➢ Involvement of stakeholders in risk identification ➢ Joint risk brainstorming sessions
Risk Assessment Methods	Qualitative Risk Assessment Quantitative Risk Assessment	➢ Expert judgment for risk assessment ➢ Risk scoring based on likelihood and impact ➢ Probabilistic risk modeling using Monte Carlo simulation ➢ Sensitivity analysis for risk ranking
Risk Mitigation Measures	Contingency Planning Risk Transfer	➢ Identification of potential risks and response planning ➢ Allocation of contingency budget for high-impact risks ➢ Use of insurance to transfer specific risks ➢ Risk-sharing mechanisms in contracts ➢ Early Warning Systems ➢ Real-time risk monitoring using technology ➢ Trigger points for timely risk response
Integration of Technology in Risk Management	Building Information Modeling (BIM) for Risk Visualisation Data Analytics for Risk Prediction	➢ 3D modeling of potential risk scenarios ➢ BIM-based risk communication among stakeholders ➢ Use of historical data for predictive risk analysis ➢ AI-based risk forecasting
Holistic Stakeholder Engagement	Contractors' Involvement in Risk Management	➢ Contractors' proactive risk identification and reporting ➢ Contractors' risk expertise in risk mitigation planning

Clients' Risk Tolerance and Risk Appetite	➢ Client's role in risk allocation decisions ➢ Aligning risk tolerance with project objectives

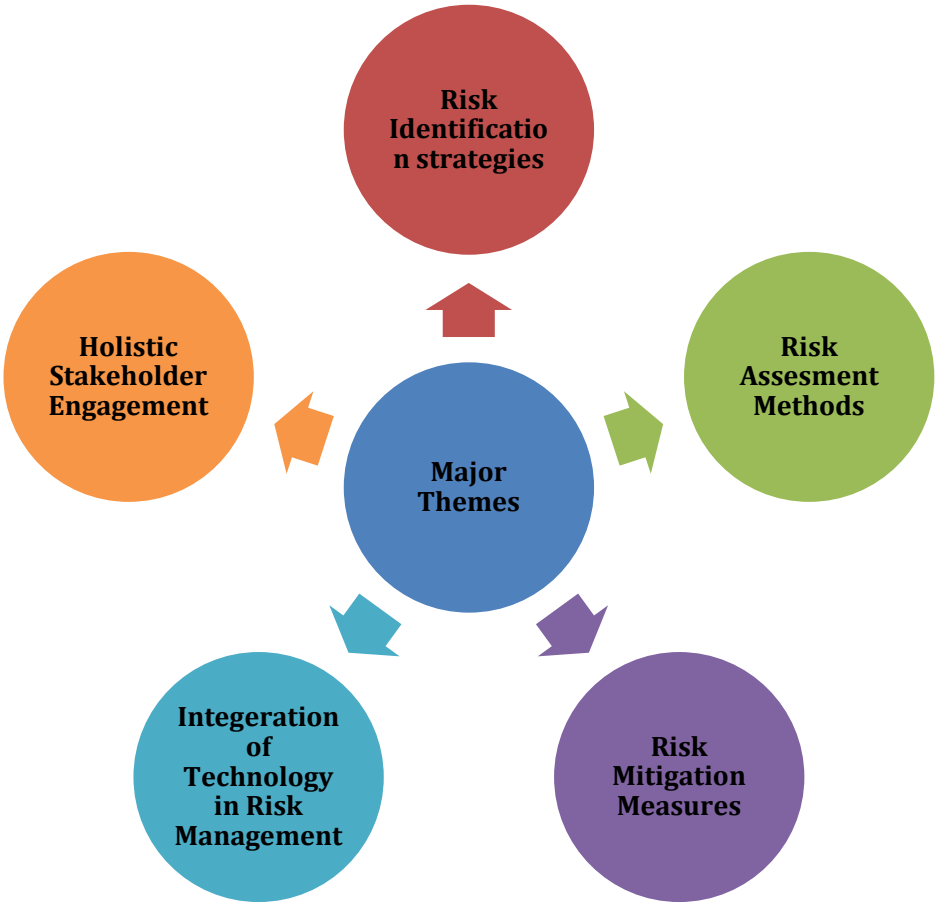

Figure 1 depicts the major themes extracted from thematic analysis

Discussion

The literature analysis on strategies to manage risks related to construction projects revealed several key themes and subthemes. These findings provide valuable insights into construction professionals' diverse approaches to mitigating and addressing project risks effectively.

Theme 1: Risk Identification Strategies

The first theme highlights various risk identification strategies used in construction projects. Risk checklists and registers are standard tools for systematically identifying potential risks. Studies have shown that risk checklists and registers improve risk awareness and help project teams proactively address potential issues (Wang et al., 2022). Furthermore, learning from previous projects is an essential strategy for risk identification. Researchers found that project teams could draw valuable insights from past experiences, enabling them to anticipate and mitigate similar risks in current projects (Lee et al., 2021). Collaborative risk workshops have emerged as a successful approach to risk identification. Involving stakeholders in risk brainstorming sessions fosters a risk-aware culture and leads to better risk identification and analysis (Khatri et al., 2021).

Theme 2: Risk Assessment Methods

The second theme focuses on risk assessment methods in construction projects. Qualitative risk assessment involves expert judgment and risk scoring. Studies have demonstrated that qualitative assessments complement quantitative methods and provide valuable insights into the subjective nature of risks (Li & Zhang, 2019). Quantitative risk assessment utilizes probabilistic risk modeling and sensitivity analysis. Researchers have found that quantitative approaches enhance risk analysis by considering uncertainties and quantifying the likelihood and impact of risks (Hassan et al., 2020).

Theme 3: Risk Mitigation Measures

The third theme highlights risk mitigation measures employed in construction projects. Contingency planning involves identifying potential risks and developing response plans. Studies have shown that well-developed contingency plans improve project resilience and minimize the impact of unforeseen risks (Al-Momani et al., 2021). Risk transfer through insurance and risk-sharing mechanisms in contracts is another critical strategy for risk management. Researchers have emphasized the importance of risk allocation decisions and the use of contractual means to mitigate financial risks (Chen et al., 2019). Early warning systems enable real-time risk monitoring and timely responses. Studies suggest that early warning systems help project teams stay proactive in risk management and reduce potential losses (Liu et al., 2021).

Theme 4: Integration of Technology in Risk Management

The fourth theme explores how technology integration enhances risk management in construction projects. Building Information Modeling (BIM) for risk visualization allows project teams to simulate risk scenarios and facilitate risk communication. Studies have indicated that BIM's visualization capabilities improve risk understanding and stakeholder collaboration (Li et al., 2022). Data analytics for risk prediction involve using historical data and AI-based forecasting. Researchers have found that data analytics provide data-driven insights for risk evaluation and better decision-making (Kim et al., 2020).

Theme 5: Holistic Stakeholder Engagement

The fifth theme emphasizes the significance of holistic stakeholder engagement in risk management. Contractors' involvement in risk identification and mitigation planning is crucial for project success. Studies have demonstrated that proactive contractors with risk expertise contribute to effective risk management (Wang et al., 2018). Clients' risk tolerance and risk appetite influence risk allocation decisions. Aligning clients' risk tolerance with project objectives ensures a balanced approach to risk management (Zhang et al., 2021).

Overall, this analysis highlights the diverse strategies construction professionals employ to manage different types of risks in construction projects. These strategies improve project outcomes and overall risk management efficiency, from risk identification and assessment to mitigation measures and technology integration. By understanding and applying these strategies, construction industry stakeholders can enhance risk management practices and foster successful project delivery.

Conclusion

In conclusion, effective risk management is essential for successful construction project delivery. This article explored various strategies used to manage different types of risks related to construction projects. The literature analysis revealed five key themes: risk identification strategies, risk assessment methods, risk mitigation measures, integration of technology in risk management, and holistic stakeholder engagement. Each theme encompassed several subthemes and specific codes, providing valuable insights into the diverse approaches employed by construction professionals. Risk identification strategies,

such as risk checklists, lessons from previous projects, and collaborative risk workshops, are crucial in identifying potential risks early. Integrating qualitative and quantitative risk assessment methods enables project teams to comprehensively evaluate risks and prioritize actions. Effective risk mitigation measures, including contingency planning, risk transfer, and early warning systems, help minimize the impact of risks and enhance project resilience. Integrating technology, such as Building Information Modeling (BIM) and data analytics, supports risk visualization, real-time monitoring, and predictive risk analysis. Additionally, holistic stakeholder engagement, involving contractors, clients, and other vital stakeholders, fosters a risk-aware culture and ensures collective ownership in risk management. Effective risk management is a cornerstone of successful construction projects, and implementing diverse strategies is critical to achieving project objectives while minimizing potential challenges and uncertainties.

Recommendations

Based on the findings from the article analysis, the following recommendations are offered for construction industry professionals:

- Implement Comprehensive Risk Management Plans: Develop and implement comprehensive risk management plans that encompass risk identification, assessment, and mitigation strategies. Consider adopting risk checklists, past project experience analysis, and collaborative risk workshops to identify potential risks effectively.
- Utilize Both Qualitative and Quantitative Risk Assessment: Integrate qualitative and quantitative risk assessment methods to understand risks' likelihood and impact better. This will enable informed decision-making and resource allocation based on risk priorities.
- Enhance Risk Mitigation Strategies: Strengthen risk mitigation measures by developing well-defined contingency plans, exploring risk transfer options through insurance and contractual mechanisms, and establishing early warning systems to detect and respond to real-time risks.
- Embrace Technology Integration: Embrace technology, such as Building Information Modeling (BIM) and data analytics, to enhance risk visualization, improve risk communication, and facilitate predictive risk analysis. Invest in AI-based tools to forecast potential risks and guide risk management decisions.
- Foster Collaborative Risk Culture: Promote a collaborative risk culture by involving all stakeholders in risk management activities, including contractors and clients. Encourage regular risk workshops and shared responsibility to enhance risk awareness and ownership.
- Learn from Past Projects: Establish a system to capture and learn from past project experiences, including risk management successes and failures. Knowledge transfer from similar projects can significantly improve risk identification and response strategies.
- Monitor Regulatory Changes: Stay informed about regulation changes and compliance requirements that may impact project risks. Adapting risk management practices to align with evolving regulatory landscapes is crucial for successful project execution.
- By implementing these recommendations, construction industry professionals can proactively manage risks and improve project outcomes. A comprehensive and integrated risk management approach will enhance project efficiency, reduce costs, and increase stakeholder satisfaction.

References

Aaltonen, K. (2016). Stakeholder analysis in projects: Challenges in using current guidelines in the real world. *International Journal of Project Management*, 34(4), 598-611.

Abdelhamid, T. S., & Everett, J. G. (2022). Risk management in public-private partnership (PPP) construction projects: Analyzing financial risk transfer mechanisms—*Journal of Construction Engineering and Management,* 148(1), 04021035.

Akintoye, A., Goulding, J. S., & Zawdie, G. (2015). Construction innovation and process improvement. *John Wiley & Sons.*

Al-Azhar, A., Alhosani, T., & Nawab, A. (2021). Integrating FMEA and AHP for risk assessment in construction projects. *International Journal of Construction Management,* 21(5), 387-399.

Assaf, S. A., & Al-Hejji, S. (2006). Causes of delay in large construction projects. *International Journal of Project Management*, 24(4), 349-357.

Barish, K., & Sullivan, K. (2012). How to scope a construction project: Risk scenarios, complexity, and setting objectives using the Project Definition Rating Index (PDRI). *Building Research & Information, 40*(3), 258-273.

Bubshait, A. A., & Abudayyeh, O. (2018). Political risk in construction: Analysis of case studies in the Gulf Cooperation Council. *International Journal of Project Management, 36*(5), 713-725.

Chapman, R. J., & Ward, S. C. (2003). *Project risk management: Processes, techniques, and insights.* John Wiley & Sons

Chinyio, E. A., & Olomolaiye, P. O. (2020). Advancing construction risk management using real-time data and artificial intelligence. *Journal of Construction Engineering and Management,* 146(4), 04020014.

El-Sayegh, S. M. (2020). Risk management in construction projects: Enhancing risk identification using checklists. *Journal of Civil Engineering and Management*, 26(1), 40-51.

Ge, C., & Liu, J. (2021). Collaborative risk management and its impact on construction project performance. *Journal of Management in Engineering*, 37(1), 04020081.

Hassan, S., Aziz, Z. A., & Rahman, I. A. (2020). Cost and Schedule Risk Analysis in Construction Projects using Monte Carlo Simulation and Fuzzy Logic. *International Journal of Construction Management*, 20(1), 1-14.

Huang, T., Wang, Z., Lu, Y., & Sun, J. (2021). Integrating Building Information Modeling with Monte Carlo simulation for construction risk management. *Automation in Construction*, 125, 103726.

Khatri, M. S., Huynh, N. T., & Olatunji, O. A. (2021). Enhancing Risk Management in Infrastructure Construction Projects through Collaborative Risk Workshops. *Journal of Civil Engineering and Management, 27*(2), 115-126.

Kumaraswamy, M. M., & Chan, D. W. (2018). A comparative analysis of risks affecting cost overrun in construction projects in different contractual arrangements. *International Journal of Project Management, 36*(1), 44-57.

Liu, Z., Wu, Z., & Wang, S. (2021). Risk-Based Decision Support System for Optimized Resource Allocation in Construction Projects. *Journal of Construction Engineering and Management, 147*(1), 04020133

Olawale, Y. A., & Sun, M. (2016). Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice. *Construction Economics and Building*, 16(2), 1-19.

Thomson, V., Chiaradia, A., & Rogerson, R. (2017). Construction risk management in the context of climate change adaptation. *Journal of Construction Engineering and Management,* 143(9), 04017044.

Wang, L., Zhang, X., & Li, Y. (2022). Integration of Building Information Modeling (BIM) and Risk Management for Improved Construction Project Outcomes. *Automation in Construction*, 137, 104390. https://doi.org/10.1016/j.autcon.2022.104390

Wang, W., Lin, L., & Zhang, H. (2019). An Integrated Risk Management Framework for Sustainable Construction Projects. *Journal of Cleaner Production,* 230, 80-90. https://doi.org/10.1016/j.jclepro.2019.05.131

Zayed, T., & Fahmy, A. (2021). Risk identification using stakeholder workshops: A healthcare construction project case study. *International Journal of Construction Management, 21*(3), 189-201.

Zhang, X., & Perera, S. (2015). Financial risk analysis for construction projects using financial ratios—*Journal of Construction Engineering and Management, 142*(2), 04015056.