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IMPACT OF BUILDING INFORMATION MODELLING (BIM) ON STAKEHOLDER-INDUCED SCOPE CHANGES IN CONSTRUCTION PROJECTS IN URBAN AREA OF LAGOS STATE

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Abstract

Effective project scope management is critical to successful construction delivery. Most construction project, especially in urban areas like Victoria Island and Ikoyi, Lagos suffer stakeholder-induced scope changes frequently causing delays, cost overruns and some scope creep. These problem stem from evolving client needs, regulatory demands and poor communication. Building Information Modelling (BIM) has proven effective globally in improving coordination, change control and stakeholder alignment in the construction industry. This study assesses the impact BIM's on stakeholder-induced scope changes. The study adopted a quantitative research design with exploratory method to collect data from construction professionals using structured questionnaires. Two hundred and forty respondents were selected from a population 1500 construction professionals using stratified random sampling. The data were analyzed using SPSS software version 29. Descriptive and inferential statistics were applied and validity and reliability tests confirmed the robustness of the research instrument. The results show that regulatory delays, poor communication, late stakeholder requests and unclear roles are major causes of scope change. BIM significantly reduces these issues from 68 % to 50 % indicating that communication is critical. The Pseudo R-Square values ranged between 0.514 and 0.575, indicating that the OLR model explains approximately 51% to 58% of the variance in stakeholder induced scope changes. BIM reduces stakeholder induced scope changes by improving communication, coordination, visualization and decision-making, strengthening alignment and enhancing construction scope stability.

Keywords:
Building Information Modelling, Scope Creep, Stakeholder Management, Construction Projects, Lagos.

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Introduction

Construction projects involve multiple stakeholders whose decisions significantly influence project scope and performance (Kumar and Suvvari, 2022). Literature consistently identifies stakeholder induced scope changes as a major cause of cost overruns, schedule delays and scope creep, particularly in complex urban developments (Kumar and Suvvari, 2022; Kivell et al., 2024). Stakeholders such as clients, consultants, contractors, regulators and financiers frequently introduce changes during project execution, leading to scope creep when these changes are not effectively controlled (Kivell et al., 2024). Clients are widely recognised as the primary drivers of scope changes, often revising functional requirements, layouts, finishes, performance standards as market conditions evolve or project understanding improves (Kivell et al., 2024). Consultant induced changes commonly result from late design revisions, coordination failures, or technical optimisations during construction (Jones and Agu, 2022). Regulatory authorities also contribute by imposing new compliance requirements or requesting mid project modifications, particularly in high density urban areas (Nigerian Construction Council, 2023). Financiers increasingly demand sustainability and ESG related upgrades, while contractors may initiate changes due to constructability challenges or unforeseen site conditions (SpringerLink Case Studies, 2025).

The key causes of stakeholder induced scope changes include unclear initial project briefs, inadequate early stakeholder engagement, fragmented communication systems, informal approval processes, and weak documentation practices (Adeleke et al., 2023; Olaseni, 2025). In developing countries construction contexts such as Nigeria, these challenges are intensified by delayed regulatory approvals, reliance on informal communication platforms and limited use of digital project management tools (African BIM Report, 2022). Empirical evidence shows that the effects of stakeholder driven scope changes on project performance are significant, resulting in budget overruns, schedule delays, rework, and disputes (Adeleke et al., 2023). Over 50% of global construction projects exceed budgets and schedules due to unanticipated scope changes (Kumar and Suvvari, 2022), while more than 68% of publicly funded projects in Nigeria experience cost overruns linked to poorly managed stakeholder-induced changes (Nigerian Construction Council, 2023). Building Information Modelling (BIM) is increasingly recognized as an effective mitigation tool for managing stakeholder induced scope changes. BIM enhances visualisation, coordination and transparency by enabling early design evaluation, cost and schedule simulation and traceable change approvals (ISO 19650, 2021; Davis and Park, 2022). However, application of BIM in managing project scope in the Nigeria's construction industry is still a low state, thus limiting effective scope management in the sector (African BIM Report, 2022). This study aims to assess the impact of Building Information Modelling (BIM) on stakeholder-induced scope changes in construction projects by identifying contributing factors, evaluating BIM's impact and recommending strategies for mitigating such scope changes.

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Literature Review

Construction project scope defines the boundaries, deliverables and requirements necessary to achieve project objectives within agreed cost and time constraints (Agyekum-Mensah & Knight, 2021). A clearly defined scope provides stability and direction, while poorly defined or continuously altered scope exposes projects to inefficiency and risk (PMI, 2021). Stakeholder induced scope change occurs when clients, consultants, contractors, regulators, or financiers introduce new requirements or revise decisions during project execution. These changes often evolve gradually through informal instructions, late design modifications, material substitutions, or evolving market expectations (Agyekum-Mensah & Knight, 2021). When such changes are not formally documented or approved, they result in scope creep which is an uncontrolled expansion of work that leads to cost overruns, delays, rework and disputes (Aljohani, Ahiaga-Dagbui & Moore, 2020; Agyekum-Mensah & Knight, 2021). In Nigeria, particularly in high value developments in Victoria Island and Ikoyi, scope creep is intensified by client indecision, fluctuating economic conditions, regulatory interventions and weak documentation practices, making projects highly vulnerable to disruption (Nigerian Construction Council, 2023; Adeleke et al., 2022).

Theoretical explanations for stakeholder induced scope change are strongly grounded in Stakeholder Theory and Systems Thinking. Stakeholder Theory argues that project outcomes are shaped by the interests, expectations and power of multiple actors (Jones & Agu, 2022), and that failure to properly identify, analyse and manage these actors often leads to late interventions and conflicting demands that destabilize project scope (Freeman, 1984; Jones & Agu, 2022). In construction projects, stakeholders including clients, consultants, contractors, regulators and financiers frequently exert influence at different stages of the project lifecycle. These interventions may occur without full awareness of their wider implications, resulting in adjustments to project priorities that disrupt previously agreed scope boundaries. When stakeholder expectations are not aligned early, projects become vulnerable to continuous modifications and scope instability. Systems Thinking further explains stakeholder induced scope change by viewing construction projects as interconnected and dynamic systems rather than isolated tasks. Within this framework, a change in one project component inevitably produces ripple effects across other dimensions such as cost, time, quality, safety, and risk (Williams, 2022). From this perspective, even minor stakeholder driven changes can escalate into major disruptions when introduced without holistic evaluation of their consequences. The cumulative impact of several small, poorly assessed changes often proves more damaging than a single major variation, highlighting the importance of integrated analysis and coordination. The Project Management Iron Triangle reinforces this logic by emphasizing the interdependence of scope, cost and time. Any modification to project scope, if not carefully managed, will directly affect budget and schedule performance, thereby undermining overall project objectives (PMI, 2021). This principle underscores the need for structured decision-making processes and effective change control mechanisms in construction projects.

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Building Information Modelling (BIM) aligns closely with both Stakeholder Theory and Systems Thinking by providing an integrated digital platform that enhances transparency, coordination and collective understanding. BIM enables stakeholders to visualize project components, assess change implications and evaluate alternatives collaboratively. By making the impacts of scope changes visible, traceable and collectively assessable, BIM supports structured decision making and reduces the likelihood of uninformed stakeholder interventions, thereby contributing to improved scope stability and project performance (Zou et al., 2022).

Empirical evidence consistently confirms that stakeholder induced scope change is a dominant cause of poor project performance worldwide. Global studies indicate that more than half of cost overruns in construction projects are directly linked to stakeholder-initiated changes, particularly those arising from poor communication and fragmented decision-making (Li & Skitmore, 2020; Kumar & Suvvari, 2022). In Nigeria, national audits report that a significant proportion of public and private projects exceed original budgets primarily due to undocumented scope changes (Nigerian Construction Council, 2023). Research focused on Lagos reveals that client driven changes, consultant design revisions, regulatory adjustments, and delayed approvals are especially prevalent in dense urban developments (Olanrewaju & Abdul-Aziz, 2021; Adeleke et al., 2023). Empirical studies further demonstrate that BIM adoption significantly reduces the frequency and impact of stakeholder induced scope changes. Projects operating at higher BIM maturity levels report fewer change orders, improved coordination, and reduced disputes due to early clash detection, real time visualization, and structured change tracking (Nkosi & Smith, 2021; Zou et al., 2022). However, low BIM adoption in Nigeria is associated with increased undocumented changes and higher project risk (Adeleke et al., 2023). The literature shows that stakeholder induced scope change is not random but a predictable outcome of complex stakeholder interactions within construction projects. Conceptual, theoretical, and empirical findings collectively highlight that weak stakeholder management and poor information control amplify scope instability, while BIM serves as a critical moderating tool that enhances transparency, coordination, and accountability. In fast paced, high value construction environments such as Victoria Island and Ikoyi, strengthening stakeholder engagement and BIM enabled scope management is essential for reducing disruptions and improving project performance.

Methodology

This study adopted a quantitative research design. Victoria Island and Ikoyi were selected as the study area due to concentration of high-value construction projects, extensive involvement of multiple stakeholders and the growing adoption of BIM tools. These characteristics make the locations suitable for assessing scope management challenges within complex urban construction environments. The study combined descriptive and exploratory research methods to achieve its objectives. The descriptive approach was used to assess the current level of BIM adoption and usage among construction professionals, while the exploratory approach enabled the identification of stakeholder related factors that contribute to scope changes. This combination provided a comprehensive understanding of both the nature and causes of scope changes in construction projects within the study area. The study population comprised of 1000

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construction professionals actively involved in projects within Victoria Island and Ikoyi, including project managers, engineers, architects, builders, quantity surveyors, contractors, and regulatory officials. A purposive sampling technique was adopted to ensure that respondents possessed relevant knowledge and experience in BIM application and scope management. Using Slovin's formula, a sample size of 286 was determined. However, due to time and logistical constraints, 240 questionnaires were distributed. Out of these, 200 valid questionnaires were retrieved, representing a high response rate and forming the basis for data analysis. Primary data were collected using a structured questionnaire adapted from relevant and recent literature to ensure content validity (Adeleke et al., 2023; Liu et al., 2024). Data analysis was conducted via IBM SPSS Version 30 based on descriptive and inferential statistical techniques, including correlation and regression analysis. The validity and reliability of the research instrument were established through expert review, factor analysis, and a Cronbach's Alpha coefficient of 0.82, indicating strong internal consistency (Sürücü & Maslakci, 2020). Ethical considerations, including informed consent, anonymity, and confidentiality of respondents, were strictly observed throughout the research process.

Results and Discussion

Stakeholder Induced Factors Contributing to Scope Changes

Table 8 highlights poor change control (mean = 4.29), late client requests (3.98), and evolving requirements (3.82) as major contributors to scope changes. These findings align with literature identifying stakeholder misalignment and weak governance as primary drivers of scope creep (Ofori & Kien, 2004). High mean values indicate frequent occurrence, underscoring the need for structured digital tools to manage stakeholder expectations. BIM has been widely recognized as effective in addressing these challenges through enhanced visualization and information coordination (Chan et al., 2018). Factor analysis was also employed in this study to reduce sixteen stakeholder induced variables into a smaller number of meaningful underlying factors influencing scope changes in construction projects. The suitability of the data was confirmed using the Kaiser Meyer Olkin (KMO) test and Bartlett's Test of Sphericity, which indicated adequate sample size and significant correlations among variables. Exploratory Factor Analysis (EFA) using principal component extraction and rotation revealed four major components with eigenvalues greater than one. Most variables recorded moderate to high communalities, showing that the extracted factors adequately explained shared variance and underlying root causes of scope changes.

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Table 1: Descriptive Statistics for various stakeholder-induced factors contributing to scope changes in construction projects.

Descriptive Statistics					
	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error
Incomplete or Evolving Client Requirements	200	1	5	3.82	.079
Late Requests for New Features or Functional Modifications	200	1	5	3.98	.073
Poor Communication and Misinterpretation of Design Intent	200	1	5	3.87	.070
Weak Stakeholder Engagement in Early Project Stages	200	1	5	3.48	.078
Conflicts Between Stakeholder Interests	200	1	5	3.51	.076
Inadequate Project Briefing and Ambiguous Scope Definition	200	1	3	2.48	.038
Regulatory and Approval Delays	200	1	3	2.36	.043
Design Errors and Omissions	200	1	3	2.44	.037
Do your company invested in BIM technology and training	200	1	3	2.41	.041
Stakeholder Lack of Technical Knowledge	200	1	3	2.31	.043
Market and Operational Changes Affecting Stakeholder Preferences	200	1	5	3.96	.076
Poor Change Control and Decision-Making Structures	200	1	5	4.29	.061
Inconsistent or Contradictory Stakeholder Inputs	200	1	5	3.36	.081
Unclear Roles and Responsibilities	200	1	5	3.48	.062
Frequent Turnover of Stakeholders or Representatives	200	1	5	3.35	.068
Unrealistic Expectations of Project Outcomes	200	1	5	3.62	.080

Impact of BIM on Stakeholder-Induced Scope Changes

Table 9 shows that BIM significantly improves transparency, collaboration, and decision-making, with mean scores above 3.5 for most variables. The strongest effects relate to reduced miscommunication and improved stakeholder alignment, supporting findings by Hussain et al. (2019) that digital models enhance shared understanding. The regression results further indicate that BIM explains over 50% of variance in scope change mitigation, demonstrating moderate explanatory power. This confirms BIM's effectiveness as a tool for managing stakeholder-induced scope changes. Ordinal Logistic Regression (OLR) was employed to examine the impact of Building Information Modelling (BIM) on stakeholder induced scope changes in construction projects. The model fitting results indicated an acceptable model fit, as evidenced by a significant model chi-square value ($p < 0.05$) and an insignificant Goodness-of-Fit value. The Pseudo R-Square values ranged between 0.514 and 0.575, indicating that the model explains approximately 51% to 58% of the variance in stakeholder induced scope changes, which suggests moderate explanatory strength. The parameter estimates revealed that all BIM related predictors exhibited positive relationships with scope change mitigation. Notably, a reduction in miscommunication and information gaps, as well as improved

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stakeholder alignment and communication, showed the strongest effects. A unit increase in these variables increased the odds of reducing scope changes by approximately 60.8% and 50.4% respectively, highlighting communication as a critical factor in mitigating stakeholder induced scope changes.

Table 2: Descriptive Statistics for assessing the impact of BIM on stakeholder-induced scope changes in a construction project.

Descriptive Statistics					
	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error
Support for Lifecycle-Oriented Stakeholder Needs	200	1	5	3.81	.078
Minimization of Rework and Construction Phase Interruptions	200	1	5	3.60	.078
Enhanced Transparency and Accountability	200	1	5	3.70	.072
Improved Collaboration Under Integrative Procurement Systems	200	1	5	3.76	.078
Alignment of Expectations Through Early Visualization	200	1	5	3.54	.082
Cost and Time Transparency Through 4D/5D BIM	200	1	5	3.55	.074
Reduction in Miscommunication and Information Gaps	200	1	5	3.61	.079
Enhanced Change Management and Documentation	200	1	5	3.73	.073
Better Decision-Making Through Model-Based Analysis	200	1	5	3.62	.086
Increased Accuracy in Design Coordination	200	1	5	3.40	.084
Enhanced Clarity of Project Requirements	200	1	3	2.44	.037
Reduction in Late Design Modifications	200	1	3	2.41	.041
Improved Stakeholder Alignment and Communication	200	1	3	2.31	.043

BIM Enabled Mitigation Measures for Scope Changes

Table 10 emphasizes early option evaluation (mean = 4.29) and BIM-integrated communication protocols (3.96) as the most effective mitigation strategies. These measures align with literature advocating early visualization and scenario testing to prevent late-stage scope changes (Zuo & Zhao, 2014). Lower mean values for advanced applications such as 7D

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BIM suggest limited adoption, reflecting capacity constraints in developing contexts (Acheampong et al., 2024). Overall, the table reinforces BIM's strategic role in proactive scope management.

Table 3: Descriptive Statistics for recommendations on how BIM can mitigate stakeholder-induced scope changes.

Descriptive Statistics					
	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error
Strengthen Early Stakeholder Engagement Through BIM Visualization	200	1	3	2.44	.037
Implement BIM-Based Collaboration Platforms	200	1	3	2.41	.041
Adopt BIM for Enhanced Design Coordination and Clash Detection	200	1	3	2.31	.043
Integrate BIM into Stakeholder Communication Protocols	200	1	5	3.96	.076
Use BIM for Early Option Evaluation and Scenario Testing	200	1	5	4.29	.061
Implement BIM-Based Change Management Workflows	200	1	5	3.36	.081
Integrate BIM with Cost (5D) and Time (4D) Modelling	200	0	5	3.61	.085
Use BIM to Support Contractual Clarity and Scope Definition	200	0	5	3.49	.096
Establish Continuous Stakeholder Coordination Through BIM Meetings	200	0	5	3.29	.092
Provide BIM Training for Stakeholders	200	0	5	2.91	.082
Utilize BIM for Facility Management Insight (7D BIM)	200	0	5	2.35	.053
Integrate BIM with Procurement and Contracting Strategies	200	0	4	2.32	.050

Conclusion

The study concludes that stakeholder-induced scope changes remain a significant challenge in the delivery of building construction projects in Nigeria, particularly on medium- and large-scale projects. Late client requests, evolving project requirements, and weak change control mechanisms were identified as dominant drivers of scope instability, often leading to cost overruns and schedule disruptions. The findings further establish that Building Information Modelling (BIM) plays a critical role in mitigating the negative impacts of scope changes. BIM

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adoption significantly enhances project transparency, stakeholder communication, and coordination by providing a shared digital platform for visualization, information exchange, and decision-making. These capabilities reduce misinterpretation of project requirements and improve alignment among project participants. The study confirms that BIM-enabled strategies such as early design option evaluation, real-time information updates, and structured digital communication protocols are effective in managing stakeholder expectations and minimizing late-stage variations. However, the limited adoption of advanced BIM applications indicates capacity and resource constraints within the Nigerian construction industry. The study concludes that wider BIM adoption, supported by organizational commitment, training, and standardized implementation frameworks, is essential for improving scope control and enhancing overall project performance in Nigeria's construction sector.

Recommendations

In light of the findings of this study, the following recommendations are proposed to enhance scope control, strengthen stakeholder coordination, and improve overall project delivery performance in construction sectors in Nigeria.

1. Implement standardized and enforceable change control procedures to manage stakeholder-induced variations and prevent late-stage scope alterations.
2. Promote compulsory use of BIM in medium- and large-scale projects to enhance coordination, transparency, and decision-making.
3. Prioritise training and professional development to address skill gaps and enable effective use of advanced BIM applications.
4. Develop and enforce unified BIM policies and guidelines to ensure consistent implementation across the construction industry.

References

Acheampong, A. O., Kissi, E., & Badu, E. (2024). Digital technologies for sustainable construction delivery in developing countries. Journal of Cleaner Production, 420, 138420. https://doi.org/10.1016/j.jclepro.2023.138420

Adeleke, A. Q., Bahaudin, A. Y., Kamaruddeen, A. M., & Bamgbade, J. A. (2022). Influence of stakeholder management on construction project success in developing countries. International Journal of Construction Management, 22(6), 1021–1033. https://doi.org/10.1080/15623599.2020.1711492

Adeleke, A. Q., Windapo, A. O., & Aigbavboa, C. O. (2023). Drivers of scope creep in Nigerian construction projects. Journal of Engineering, Design and Technology, 21(3), 765–782. https://doi.org/10.1108/JEDT-04-2022-0184

African BIM Report. (2022). BIM adoption and maturity levels in Africa. African Construction Research Network.

Agyekum-Mensah, G., & Knight, A. (2021). The professionals' perspective on scope change management in construction projects. Construction Economics and Building, 21(1), 43–60. https://doi.org/10.5130/AJCEB.v21i1.7396

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Vol 2(1) March 2026
ISSN: 3121 9144

Aljohani, A., Ahiaga-Dagbui, D., & Moore, D. (2020). Construction projects cost overrun: What does the literature tell us? International Journal of Project Management, 38(2), 117–135. https://doi.org/10.1016/j.ijproman.2019.09.001

Babalola, O. O., & Lawal, A. F. (2024). Causes and effects of construction project delays in Lagos State, Nigeria. International Journal of Construction Management, 24(3), 356–368. https://doi.org/10.1080/15623599.2023.2187421

Chan, A. P. C., Darko, A., & Ameyaw, E. E. (2022). Strategies for promoting sustainable construction in developing countries. Sustainable Cities and Society, 81, 103829. https://doi.org/10.1016/j.scs.2022.103829

Chan, D. W. M., Olawumi, T. O., & Ho, A. M. L. (2018). Perceived benefits of building information modelling in construction projects. Facilities, 36(13/14), 698–715. https://doi.org/10.1108/F-07-2017-0073

Davis, R., & Park, M. (2022). BIM-enabled collaboration and decision-making in construction projects. Automation in Construction, 134, 104041. https://doi.org/10.1016/j.autcon.2021.104041

Freeman, R. E. (1984). Strategic management: A stakeholder approach. Pitman.

Gioia, D. A. (2021). A systematic methodology for qualitative research. Organizational Research Methods, 24(1), 20–52. https://doi.org/10.1177/1094428120938739

Hussain, S., Fangwei, Z., Siddiqi, A. F., Ali, Z., & Shabbir, M. S. (2019). Structural equation model for evaluating factors affecting quality of social infrastructure projects. Sustainability, 11(18), 4976. https://doi.org/10.3390/su11184976

ISO 19650. (2021). Organization and digitization of information about buildings and civil engineering works—Information management using building information modelling. International Organization for Standardization.

Jones, K., & Agu, C. (2022). Stakeholder coordination challenges in complex construction projects. Built Environment Project and Asset Management, 12(4), 563–578. https://doi.org/10.1108/BEPAM-11-2021-0145

Kivell, S., Rahman, M., & Karim, A. (2024). Client-driven scope changes and project performance outcomes. International Journal of Project Management, 42(1), 34–47. https://doi.org/10.1016/j.ijproman.2023.07.004

Kumar, R., & Suvvari, A. (2022). Impact of scope changes on construction project performance. Journal of Construction Engineering and Management, 148(3), 04022005. https://doi.org/10.1061/(ASCE)CO.1943-7862.0002215

Li, Y., & Skitmore, M. (2020). Causes and impacts of change orders in construction projects. Engineering, Construction and Architectural Management, 27(5), 1253–1274. https://doi.org/10.1108/ECAM-10-2018-0479

Liu, Y., Van Nederveen, S., & Hertogh, M. (2024). BIM-based change management in construction projects. Automation in Construction, 151, 104832. https://doi.org/10.1016/j.autcon.2023.104832

Nigerian Construction Council. (2023). Annual report on construction project performance in Nigeria. NCC Publications.

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Vol 2(1) March 2026
ISSN: 3121 9144

Nkosi, S., & Smith, N. (2021). BIM maturity and scope change reduction in construction projects. Journal of Construction Project Management and Innovation, 11(2), 88–103.

Ofori, G., & Kien, H. L. (2004). Translating Singapore architects' environmental awareness into decision making. Building Research & Information, 32(1), 27–37. https://doi.org/10.1080/0961321032000150734

Oke, A. E., Aghimien, D. O., & Aigbavboa, C. O. (2023). Sustainable construction practices in developing countries: Drivers and barriers. Journal of Engineering, Design and Technology, 21(1), 205–223. https://doi.org/10.1108/JEDT-06-2022-0301

Olanrewaju, A., & Abdul-Aziz, A. R. (2021). Managing scope creep in urban construction projects. Built Environment Project and Asset Management, 11(2), 237–252. https://doi.org/10.1108/BEPAM-06-2020-0084

Olaseni, A. (2025). Informal communication and scope instability in Nigerian construction projects. Journal of Construction in Developing Countries, 30(1), 55–71.

Project Management Institute. (2021). A guide to the project management body of knowledge (PMBOK® Guide) (7th ed.). Project Management Institute.

Shehu, Z., Shehu, S., & Aliyu, M. A. (2023). Factors affecting time performance of construction projects in Nigeria. Journal of Engineering, Design and Technology, 21(4), 1012–1028. https://doi.org/10.1108/JEDT-05-2022-0241

Silvius, A. J. G., & Schipper, R. (2014). Sustainability in project management: A literature review and impact analysis. Social Business, 4(1), 63–96. https://doi.org/10.1362/204440814X13948909253866

Silvius, A. J. G., Kampinga, M., Paniagua, S., & Mooi, H. (2017). Considering sustainability in project management decision making. International Journal of Project Management, 35(6), 1133–1150. https://doi.org/10.1016/j.ijproman.2017.01.011

SpringerLink Case Studies. (2025). Financial stakeholder influence on construction project scope. Springer.

Sürücü, L., & Maslakci, A. (2020). Validity and reliability in quantitative research. Business & Management Studies: An International Journal, 8(3), 2694–2726. https://doi.org/10.15295/bmij.v8i3.1540

Swedberg, R. (2020). The role of deductive reasoning in social science research. Stanford University Press.

Williams, T. (2022). Complexity, systems thinking, and project management. Routledge.

Zou, Y., Kiviniemi, A., & Jones, S. (2022). BIM-based governance for managing project change. Automation in Construction, 139, 104267. https://doi.org/10.1016/j.autcon.2022.104267

Zuo, J., & Zhao, Z. Y. (2014). Green building research–current status and future agenda: A review. Renewable and Sustainable Energy Reviews, 30, 271–281. https://doi.org/10.1016/j.rser.2013.10.021

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