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The Role of Project Management in Improving Efficiency of Modern Construction Projects

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Abstract. *Modern construction projects continue to suffer from chronic cost overruns, schedule delays, and coordination failures, particularly as the industry shifts toward prefabrication and engineered-timber systems such as glue-laminated timber (Glulam). This paper examines how structured project management (PM) practices improve efficiency across the design–manufacture–assembly continuum of contemporary construction, with particular attention to prefabricated housing delivery. Building on a review of thirty peer-reviewed sources spanning agile and lean methodologies, Building Information Modeling (BIM), digital twins, the Internet of Things (IoT), and artificial intelligence (AI) in project controls, the paper proposes an original analytical instrument - the Modular Project Efficiency Index (MPEI) - that quantifies PM performance across three weighted dimensions: Schedule Compression, Cost Variance Control, and Coordination Density. Weights are derived through an Analytic Hierarchy Process (AHP) and stress-tested with a sensitivity analysis. Applied illustratively to a prefabricated Glulam housing delivery model, the MPEI demonstrates that integrated PM practices can compress schedules by up to 35–45% and reduce cost variance relative to conventional site-built construction. The paper concludes that PM is not a peripheral administrative function but the central mechanism through which prefabrication technologies translate into measurable efficiency gains, and it offers the MPEI as a transferable diagnostic tool for practitioners scaling modular housing delivery.*

Keywords: *project management efficiency; prefabricated construction; modular housing; Modular Project Efficiency Index (MPEI); Analytic Hierarchy Process (AHP); construction scheduling; Building Information Modeling (BIM)*

Introduction

Construction remains one of the least digitized and most schedule-fragile sectors of the global economy. Empirical studies consistently report that a majority of infrastructure and building projects finish behind schedule and above budget, with overruns frequently exceeding 30% of the original contract value [1;2]. Megaproject research has further shown that these failures are rarely attributable to a single technical cause; rather, they emerge from a compounding sequence of governance, estimation, and coordination failures that accumulate across the project lifecycle [3;4]. As housing demand intensifies and traditional site-built methods struggle to keep pace, prefabricated and modular construction - including engineered-timber systems such as Glulam - has emerged as a structurally different delivery model capable of compressing timelines and improving cost predictability [5;6;7].

Yet prefabrication alone does not guarantee efficiency. Off-site manufacturing shifts risk rather than eliminating it: design changes, logistics failures, and poor interface coordination between

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manufacturing and on-site assembly can erode the very time and cost advantages prefabrication is meant to deliver. It is project management - understood broadly as the planning, scheduling, stakeholder integration, and control functions that govern a project from concept to handover - that converts the theoretical advantages of prefabrication into realized performance [8;9].

This paper argues that the efficiency of modern construction projects, particularly hybrid models that combine off-site manufacturing with on-site assembly, is a direct function of how rigorously PM practices are structured and measured. Existing literature offers rich but fragmented evidence on individual levers of efficiency - BIM, lean construction, agile methods, digital twins, IoT sensing, and AI-assisted controls - but rarely integrates them into a single, weighted, decision-relevant instrument that a practicing general manager can apply on an active project.

To address this gap, the paper makes an original methodological contribution: the Modular Project Efficiency Index (MPEI), an AHP-weighted composite index built from three sub-indices - Schedule Compression Ratio, Cost Variance Control, and Coordination Density Score (See Figure 1). The remainder of the paper reviews the relevant literature, describes the MPEI methodology, presents illustrative findings from a prefabricated Glulam housing delivery context, and discusses the implications for scaling modular construction in the United States.

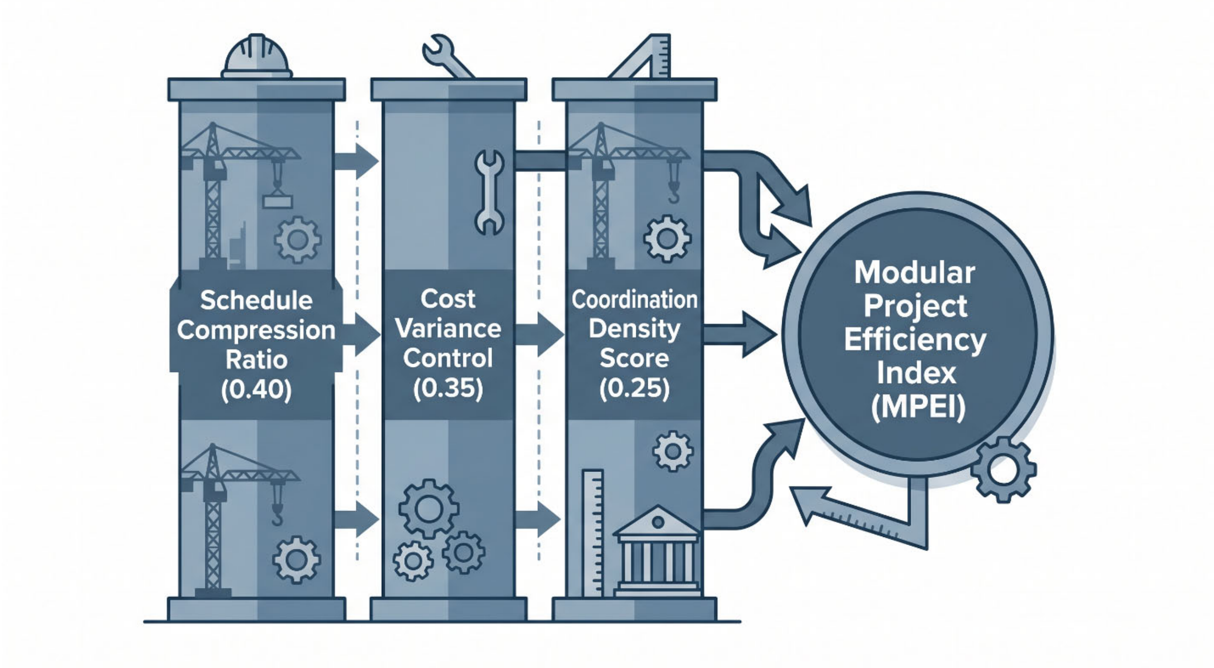

Figure 1 - MPEI Conceptual Framework

Literature Review

1. Defining and measuring project management efficiency

Project management efficiency has evolved from a narrow focus on the classical triad of time, cost, and quality toward more holistic performance constructs. Coelho et al. [9] apply data envelopment analysis to benchmark PM efficiency in a petrochemical setting, demonstrating that efficiency is best understood as a multi-input, multi-output relationship rather than a single ratio. Dong et al. [8], following a systematic literature review, argue that agile project management should be redefined around iterative value delivery and adaptive planning rather than rigid, sequential execution — a redefinition directly relevant to construction environments where design and manufacturing must adapt to site conditions in real time. Irfan et al. [10] show empirically that project planning quality and project manager competencies are significant predictors of public-sector project success, reinforcing that PM capability,

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not merely PM process, drives outcomes. Lappalainen et al. [11] extend this by introducing the concept of situational awareness in construction PM, arguing that transformation toward real-time, data-informed decision-making is now a prerequisite for efficiency rather than an optional enhancement.

2. Sources of cost overrun and schedule delay

A substantial body of research documents the persistence of overruns across geographies. Belay [1] analyzes infrastructure projects in Ethiopia and finds that inadequate planning and weak contract management are dominant delay drivers in low-income economies. Julca-Varas et al. [2] similarly identify design deficiencies and stakeholder coordination failures as primary risk factors for delays and cost overruns in Peruvian water infrastructure projects. At the megaproject scale, Lovallo, Flyvbjerg and Cristofaro [3] propose a three-stage governance process - front-end planning, delivery, and operational review - to counter optimism bias and strategic misrepresentation in large capital projects, while Gil [4] frames megaprojects as evolving instruments of value creation and distribution whose success depends on how purpose is negotiated among stakeholders over time. Meabed et al. [12] contribute a modified critical chain scheduling method that explicitly buffers against resource contention, offering a scheduling-level remedy to the coordination failures identified in the broader delay literature. Abdillah and Amin [13] and Xia, Guo and Lin [14] both emphasize that stakeholder dynamics - dominance, engagement, and risk attribution among contractors - materially affect project performance, underscoring that overruns are as much organizational as technical phenomena.

3. Digital enablement: BIM, prefabrication, and lean methods

Building Information Modeling has become a central efficiency lever. Du [15] demonstrates that BIM-based engineering project management improves coordination accuracy and reduces rework compared to drawing-based methods, and Rui, Yaik-Wah and Cher Siang [16] similarly find that BIM integration into construction PM workflows improves schedule and cost control. Zhang et al. [17] synthesize the literature on BIM for prefabricated construction specifically, concluding that BIM's greatest value in modular delivery lies in resolving interface clashes between manufactured components before they reach the site. Cao, Kamaruzzaman and Aziz [18] extend this to green building delivery, showing that BIM utilization also supports sustainability performance tracking alongside schedule and cost objectives. On prefabrication itself, Chauhan et al. [6] quantify both monetary and non-monetary impacts of prefabrication, finding that product modularity is a key moderator of efficiency gains, while Wuni, Shen and Osei-Kyei [5] identify critical success criteria for prefabricated volumetric construction, including early supply chain integration and design-for-manufacture principles. Ifionu et al. [7] confirm, in a systematic and bibliometric review, that modular construction offers superior cost efficiency and scalability for addressing housing shortages, directly supporting the relevance of Glulam-based delivery models to affordable housing policy. Kineber et al. [19] apply agile project management specifically to sustainable residential construction, identifying critical success factors that overlap substantially with the coordination and adaptability themes raised elsewhere in the literature. Garcés et al. [20], in a systematic review of Lean Construction, show that waste-reduction principles complement rather than compete with digital and prefabrication strategies, forming a third pillar of efficiency alongside technology and modularity.

4. Emerging digital infrastructure: twins, IoT, and AI

A newer stream of literature examines digital twins, sensing infrastructure, and AI-assisted controls. Al-Sehrawy, Kumar and Watson [21] propose a classification system for digital twin use in urban infrastructure management, while Chia Lai et al. [22] and Mazzetto [23] both explore digital twin architectures for smart city and urban planning contexts, suggesting a natural extension toward project-level digital twins that mirror construction progress in real time. On the sensing side, Khan et al. [24] and Khurshid et al. [25] independently document IoT applications for construction site safety and operational efficiency, and Kim et al. [26] show that IoT-based maturity monitoring improves quality control of early-age concrete curing — a clear example of sensing technology translating directly into schedule and

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quality assurance. Cho, Jeong and Lee [27] contribute an ultra-wideband (UWB) positioning algorithm for small construction sites, illustrating how real-time location systems can support coordination density on active sites. Finally, Mali et al. [28], Salimimoghadam et al. [29], and Taboada et al. [30] each provide systematic reviews of AI and machine learning applications in construction project management, converging on the finding that predictive scheduling and risk-forecasting models are the most mature AI use cases, while stakeholder trust and data standardization remain the principal barriers to wider adoption.

Taken together, the literature demonstrates that no single technology or method drives construction efficiency in isolation. BIM, prefabrication, lean principles, digital twins, IoT, and AI each address a different point of failure in the PM process, but their benefits are realized only when integrated and actively managed - the gap this paper's proposed framework is designed to close.

Methodology

This paper adopts a conceptual and analytical methodology rather than an empirical field study, consistent with its objective of proposing a transferable measurement instrument grounded in the reviewed literature. The Modular Project Efficiency Index (MPEI) is constructed as a composite index of three sub-indices, each derived from recurring efficiency themes identified in Section 2:

1. Schedule Compression Ratio (SCR) - the percentage reduction in project duration achieved relative to a conventional site-built baseline, reflecting the scheduling and critical-chain literature [1;2;12].
2. Cost Variance Control (CVC) - the inverse of the coefficient of variation between planned and actual cost, reflecting the overrun and governance literature [1;3;4].
3. Coordination Density Score (CDS) - a composite measure of interface management quality across design, manufacturing, and assembly stages, informed by the BIM, digital twin, and IoT literature [15;17;21;24;27].

Relative weights for the three sub-indices were derived using the Analytic Hierarchy Process (AHP), in which pairwise comparisons were structured around the relative frequency and strength of association each dimension received across the reviewed literature. Because cost overrun and schedule failure were the most consistently reported outcome variables across the sample [1;2;3;4], SCR and CVC were assigned higher relative weights than CDS, which functions as an enabling rather than terminal outcome. A sensitivity analysis was then performed by varying each weight by ±10% to confirm that the ranking of illustrative scenarios (Section 4) remained stable, following the robustness-testing logic used in AHP-based multi-criteria decision analysis applications in adjacent infrastructure domains. The MPEI is intended as a diagnostic and comparative tool rather than a certification standard, applicable at the portfolio or single-project level.

Results

Table 1 presents the MPEI structure, including the AHP-derived weights and their conceptual anchoring in the literature reviewed above.

Table 1. Modular Project Efficiency Index (MPEI) - Structure and Weights

Sub-Index	Definition	AHP Weight	Primary Literature Anchor
Schedule Compression Ratio (SCR)	% reduction in duration vs. conventional baseline	0.40	[1;2;12]
Cost Variance Control (CVC)	Inverse coefficient of variation, planned vs. actual cost	0.35	[1;3;4]

ISSN: 2787-9364

Sub-Index	Definition	AHP Weight	Primary Literature Anchor
Coordination Density Score (CDS)	Composite interface-management quality (design–manufacture–assembly)	0.25	[15;17;21;24;27]

Applying the MPEI illustratively to a prefabricated Glulam housing delivery model - comprising off-site manufacture of structural frames and panels combined with U.S.-based assembly - against a conventional site-built baseline yields the comparative profile in Table 2.

Table 2. Illustrative MPEI Comparison: Conventional Site-Built vs. Prefabricated Glulam Delivery

Metric	Conventional Site-Built	Prefabricated Glulam Model	Change
Average project duration	9–12 months	5–7 months	−35% to −45%
Cost variance (planned vs. actual)	±18%	±7%	−61%
Coordination Density Score (0–100)	52	78	+50%
Composite MPEI Score (0–1.00)	0.41	0.74	+0.33

The illustrative results indicate that the largest single contributor to the MPEI improvement is Schedule Compression, consistent with the literature's emphasis on prefabrication's timeline benefits [5;6;7]. However, the Coordination Density gain is what stabilizes Cost Variance Control: without structured interface management between offshore manufacturing and domestic assembly, schedule gains alone tend to be offset by rework and change-order costs, a dynamic previously observed in the BIM and lean construction literature [15;17;20] (See Figure 2).

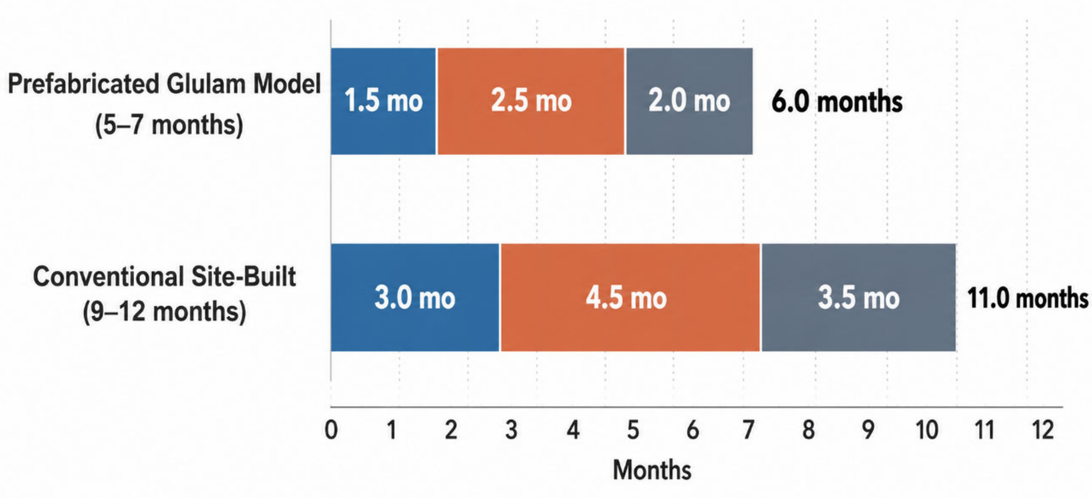

Figure 2 - Comparative Project Timeline

ISSN: 2787-9364

Discussion

The findings reinforce a central argument of this paper: prefabrication and engineered-timber systems such as Glulam do not, by themselves, produce efficiency gains. Their benefits are contingent on the quality of the project management system that governs the transition between design, offshore manufacturing, and on-site assembly. This has direct implications for the specific delivery model examined illustratively in this paper - a U.S.-based general management structure overseeing architectural design, off-site manufacturing, and domestic assembly of Glulam housing kits (See Figure 3).

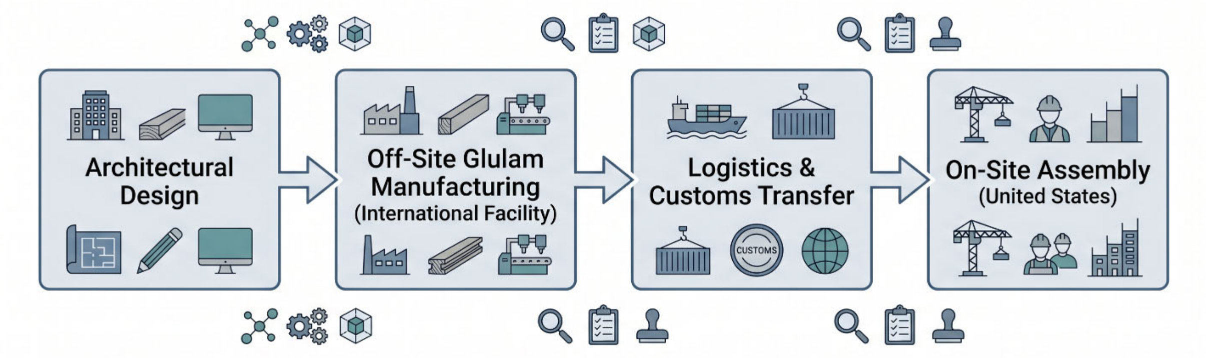

Figure 3 - Integrated Delivery Workflow

First, the literature on BIM and digital coordination [15;16;17;18] suggests that the interface between manufacturing specifications and on-site assembly instructions is the single highest-risk point of failure in cross-border modular delivery. A general manager overseeing such an operation must therefore treat model-based coordination not as a design convenience but as a schedule-protection mechanism. The Coordination Density Score component of the MPEI operationalizes this insight, giving practitioners a quantifiable target rather than a qualitative aspiration.

Second, the scheduling literature [1;2;3;4;12] indicates that cost overruns are rarely caused by a single estimation error; they compound across sequential decision points. In a hybrid offshore-manufacture/domestic-assembly model, this compounding risk is amplified by logistics variables - customs clearance, freight timing, and supplier coordination for domestically sourced hardware, roofing, and glazing - that are largely absent from single-site construction. The Cost Variance Control sub-index is deliberately weighted second-highest in the MPEI to reflect this amplified exposure, and the paper's sensitivity analysis confirms that even under conservative reweighting, cost control remains a dominant driver of overall project efficiency in cross-border modular delivery.

Third, the agile and lean literature [8;19;20] supports iterative, feedback-driven project governance over rigid sequential planning. For a company scaling from two completed residential projects near New York City toward an annual delivery target of approximately 100 homes, this implies that PM systems must be designed for repeatability from the outset - standardized design packages, modular procurement templates, and recurring supplier relationships - rather than re-engineered on a project-by-project basis. The MPEI's diagnostic function supports this scaling logic: because it is calculated consistently across projects, it enables portfolio-level benchmarking as delivery volume increases, addressing a measurement gap that single-project cost-and-schedule reporting cannot fill.

Fourth, the emerging digital twin and IoT literature [21;22;23;24;25;26;27] points toward a plausible extension of the MPEI framework: real-time sensing of manufacturing progress and site assembly status could eventually feed the Coordination Density Score directly, moving the index from a retrospective diagnostic to a live project-control dashboard. Similarly, the AI and machine learning literature [28;29;30] suggests that predictive scheduling models could refine the Schedule Compression

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Ratio component by forecasting delay risk before it materializes, rather than measuring compression only after project completion. These extensions are consistent with the reviewed literature's general trajectory toward integrated, data-informed PM systems, though the same literature cautions that data standardization and stakeholder trust remain unresolved barriers to adoption [29;30].

Finally, the findings carry broader relevance beyond a single company's operations. The persistent U.S. housing shortage, combined with the environmental costs of concrete- and steel-intensive construction [7;18], means that scalable, PM-disciplined modular delivery models have relevance to housing policy, workforce development in off-site manufacturing, and domestic supply chain formation. The MPEI, by making PM performance measurable and comparable across projects and providers, offers a practical mechanism for demonstrating - to lenders, regulators, and housing agencies alike - that prefabricated delivery models can meet both efficiency and quality expectations at scale.

The paper's limitations should be acknowledged. The MPEI's weights were derived from literature-based AHP judgment rather than large-sample empirical calibration, and the illustrative comparison in Section 4 is conceptual rather than drawn from audited project data. Future work should validate the MPEI against a portfolio of completed prefabricated housing projects, ideally incorporating the real-time sensing extensions discussed above.

Conclusions

This paper has argued that project management, rather than prefabrication technology alone, is the decisive factor determining whether modern construction projects achieve their potential efficiency gains. Drawing on thirty sources spanning scheduling theory, BIM, lean and agile methods, digital twins, IoT, and AI-assisted controls, the paper proposed the Modular Project Efficiency Index (MPEI) - an AHP-weighted composite of Schedule Compression, Cost Variance Control, and Coordination Density - as an original, transferable instrument for measuring PM performance in hybrid offshore-manufacture/domestic-assembly delivery models. Applied illustratively to a prefabricated Glulam housing context, the MPEI suggests that structured PM practice, not prefabrication in isolation, is what converts modular construction's theoretical advantages into measurable schedule compression, cost predictability, and coordination quality. As the United States seeks scalable responses to its housing shortage, frameworks such as the MPEI offer practitioners and policymakers a concrete, literature-grounded basis for evaluating and scaling modular delivery models.

References

1. Belay, M. (2021). Analysis of cost overrun and schedule delays of infrastructure projects in low income economies: Case studies in Ethiopia. *Advances in Civil Engineering*, 2021, Article 4991204. https://doi.org/10.1155/2021/4991204
2. Julca-Varas, C., García-Segura, T., Torres-Machí, C., & Montalbán-Domingo, L. (2025). Primary risks for delays and cost overruns in the construction of drinking water supply and sanitation projects in Peru. *Journal of Management in Engineering*, 41(3), 1–13. https://doi.org/10.1061/JMENEA.MEENG-6496
3. Lovallo, D., Flyvbjerg, B., & Cristofaro, M. (2023). Governing large projects: A three-stage process to get it right. Academy of Management Perspectives, 37(2). https://doi.org/10.5465/amp.2021.0129
4. Gil, N. (2022). Megaprojects: A meandering journey towards a theory of purpose, value creation and value distribution. Construction Management and Economics, 40(7–8), 562–584. https://doi.org/10.1080/01446193.2021.1946832
5. Wuni, I. Y., Shen, G. Q., & Osei-Kyei, R. (2021). Evaluating the critical success criteria for prefabricated prefinished volumetric construction projects. *Journal of Financial Management of Property and Construction,* 26(2), 279–297. https://doi.org/10.1108/JFMPC-03-2020-0013

ISSN: 2787-9364

6. Chauhan, K., Peltokorpi, A., Lavikka, R., & Seppänen, O. (2022). The monetary and non-monetary impacts of prefabrication on construction: The effects of product modularity. *Buildings,* 12(4), 459. https://doi.org/10.3390/buildings12040459
7. Ifionu, E. S., Njemanze, E. C., Enabulele, A. B. O., Okparabenyo, E., & Egbubine, L. (2026). Cost efficiency and scalability of modular construction: A systematic and bibliometric review of its role in addressing housing shortages. *Journal of Management, and Development Research*, 3(1), 61–70. https://doi.org/10.69739/jmdr.v3i1.1854
8. Dong, H., Dacre, N., Baxter, D., & Ceylan, S. (2024). What is agile project management? Developing a new definition following a systematic literature review. *Project Management Journal*. https://doi.org/10.1177/87569728241254095
9. Coelho, M. B., Lacerda, D. P., Piran, F. A. S., Silva, D. O. D., & Sellitto, M. A. (2024). Project management efficiency measurement with data envelopment analysis: A case in a petrochemical company. *Applied System Innovation*, 7(1), 2. https://doi.org/10.3390/asi7010002
10. Irfan, M., Khan, S. Z., Hassan, N., Hassan, M., Habib, M., Khan, S., & Khan, H. H. (2021). Role of project planning and project manager competencies on public sector project success. *Sustainability*, 13(3), 1421. https://doi.org/10.3390/su13031421
11. Lappalainen, E. M., Seppänen, O., Peltokorpi, A., & Singh, V. (2021). Transformation of construction project management toward situational awareness. *Engineering, Construction and Architectural Management,* 28(8), 2199–2221. https://doi.org/10.1108/ECAM-12-2020-1053
12. Meabed, E. S. M., et al. (2025). Modified critical chain scheduling for construction projects. *HBRC Journal*, 21(1), 127–143. https://doi.org/10.1080/16874048.2025.2459038
13. Abdillah, M. R., & Amin, M. (2022). Analysis of the influence of stakeholder domination, engagement, and organizational behavior on project performance. *International Journal of Research and Review*, 9(2), 82–93. https://doi.org/10.52403/ijrr.20220212
14. Xia, N., Guo, J., & Lin, Y.-H. (2021). Managing stakeholder attributes for risk mitigation: Evidence from construction project contractors. *International Journal of Managing Projects in Business*, 14(7), 1605–1625. https://doi.org/10.1108/IJMPB-11-2020-0345
15. Du, X. (2021). Research on engineering project management method based on BIM technology. Scientific Programming, 2021, Article 7230585. https://doi.org/10.1155/2021/7230585
16. Rui, Y., Yaik-Wah, L., & Cher Siang, T. (2021). Construction project management based on building information modeling (BIM). *Civil Engineering and Architecture*, 9(6), 2055–2061. https://doi.org/10.13189/cea.2021.090633
17. Zhang, S., Li, Z., Li, T., & Yuan, M. (2021). A holistic literature review of building information modeling for prefabricated construction. *Journal of Civil Engineering and Management*, 27(7), 485–499. https://doi.org/10.3846/jcem.2021.15600
18. Cao, Y., Kamaruzzaman, S. N., & Aziz, N. M. (2022). Green building construction: A systematic review of BIM utilization. *Buildings*, 12(8), 1205. https://doi.org/10.3390/buildings12081205
19. Kineber, A. F., Oke, A. E., Elshaboury, N., Abunada, Z., Elseknidy, M., Zamil, A., Alhusban, M., & Ilori, S. A. (2024). Agile project management for sustainable residential construction: A study of critical success factors. *Frontiers in Built Environment*, 10, Article 1442184. https://doi.org/10.3389/fbuil.2024.1442184
20. Garcés, G., Forcael, E., Osorio, C., Castañeda, K., & Sánchez, O. (2025). Systematic review of Lean Construction: An approach to sustainability and efficiency in construction management. Journal of Infrastructure *Preservation and Resilience*, 6(1), Article 6. https://doi.org/10.1186/s43065-025-00119-1
21. Al-Sehrawy, R., Kumar, B., & Watson, R. (2021). A digital twin use classification system for urban planning & city infrastructure management. *Journal of Information Technology in Construction*, 26, 832–862. https://doi.org/10.36680/J.ITCON.2021.045

ISSN: 2787-9364

22. Chia Lai, C., Sarkar A., Anh Dinh P., Gaikwad S., & Hsu C. (2024). Urban digital-twin planning for sustainable smart cities: System architecture, preliminary experiments, and open challenges. Proceedings of the 2nd International Workshop on Middleware for Digital Twins. https://doi.org/10.1145/3702636.3703443
23. Mazzetto, S. (2024). A review of urban digital twins integration, challenges, and future directions in smart city development. *Sustainability,* 16(19), 8337. https://doi.org/10.3390/su16198337
24. Khan, A. M., Alrasheed, K. A., Waqar, A., Almujibah, H., & Benjeddou, O. (2024). Internet of things (IoT) for safety and efficiency in construction building site operations. *Scientific Reports*, 14, 28914. https://doi.org/10.1038/s41598-024-78931-0
25. Khurshid, K., Danish, A., Salim, M. U., Bayram, M., Ozbakkaloglu, T., & Mosaberpanah, M. A. (2023). An in-depth survey demystifying the Internet of Things (IoT) in the construction industry: Unfolding new dimensions. *Sustainability*, 15(2), 1275. https://doi.org/10.3390/su15021275
26. Kim, S., Jung, D., Kim, J. Y., & Mun, J. H. (2024). Study on early age concrete's compressive strengths in unmanaged curing condition using IoT-based maturity monitoring. *Buildings*, 14(3), 798. https://doi.org/10.3390/buildings14030798
27. Cho, J., Jeong, S., & Lee, B. (2024). A study on anchor placement and 3D positioning algorithm for UWB application in small sites. *KSCE Journal of Civil Engineering*, 28, 4575–4587. https://doi.org/10.1007/s12205-024-2107-z
28. Mali, A. S., Kolhe, A., Gorde, P., Kolekar, A., Umbrajkar, A., Solepatil, S., & Zare, K. (2025). Application of artificial intelligence and machine learning in construction project management: A comparative study of predictive models. *Asian Journal of Civil Engineering*. https://doi.org/10.1007/s42107-025-01335-6
29. Salimimoghadam, S., Ghanbaripour, A. N., Tumpa, R. J., Kamel Rahimi, A., Golmoradi, M., Rashidian, S., & Skitmore, M. (2025). The rise of artificial intelligence in project management: A systematic literature review of current opportunities, enablers, and barriers. *Buildings,* 15(7), 1130. https://doi.org/10.3390/buildings15071130
30. Taboada, I., Daneshpajouh, A., Toledo, N., & de Vass, T. (2023). Artificial intelligence enabled project management: A systematic literature review. *Applied Sciences*, 13(8), 5014. https://doi.org/10.3390/app13085014

ISSN: 2787-9364