



The Impact of Agile Project Management on Project Success in Saudi Arabia's Giga-Project Sector

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Chapter 1: Introduction

1.1 Research Background

Saudi Arabia's Vision 2030 has pushed the Kingdom's construction sector into a scale and pace of delivery it has never had to handle before. Giga-projects such as NEOM, Red Sea Global, Qiddiya, and Diriyah Gate are all moving forward at once, across different regions, and contract awards across these programmes climbed 20 percent to reach \$196 billion in 2025 alone (Arab News, 2025). Delivery performance has not kept pace. A 2025 study of 222 completed construction projects in Saudi Arabia found that 64 percent ran over schedule and 53 percent went over budget, even where formal project control systems were already in place (Alotaibi et al., 2025). That gap between record investment and persistent overruns points to something structural: the sequential, phase-gated project management approach construction has relied on for decades may simply not fit an environment where regulations, stakeholder demands, and site conditions keep shifting over a multi-year delivery programme. Agile project management, built around iterative planning, cross-functional collaboration, and continuous adaptation, is one alternative already showing measurable results in the sector it came from, and, increasingly, elsewhere.

The Manifesto for Agile Software Development formalized the approach around four priorities: individuals and interactions, working deliverables, customer collaboration, and responsiveness to change, over rigid adherence to a fixed plan (Beck et al., 2001). Agile started in software, but whether it travels beyond software has drawn a growing body of research. Conforto et al. (2014) surveyed 19 medium- and large-sized companies across a range of sectors running innovative projects and found several agile enablers already present outside software development, an early sign the practices are not stuck to the industry that invented them. Serrador and Pinto (2015), working from a larger cross-industry sample, found a statistically significant positive relationship between how much agile was used and how successful the project was, with the strongest effect on stakeholder satisfaction rather than the traditional time, cost, and scope measures on their own. Zamil and Alhusban (2025) narrowed the focus to

construction, reviewing 104 studies published between 2006 and 2025, and pulled out five recurring themes: iterative planning, responsiveness to change, stakeholder collaboration, digital facilitation, and sustainability integration. Their conclusion: agile principles can improve adaptability, decision-making, and communication on construction projects generally, though organizational resistance and policy constraints keep getting in the way.

However, these findings cannot be readily generalized to Saudi Arabia's giga-project construction sector. Conforto et al.'s (2014) companies were not running construction megaprojects; their sample was innovative projects in general, not physical infrastructure delivery. Serrador and Pinto's (2015) respondents came mostly from information technology and general industry, not construction professionals working under immobile site logistics and stringent compliance mandates. Even Zamil and Alhusban's (2025) construction-focused review stayed at the level of sustainable construction broadly, not the scale, the amount of regulation, or the number of stakeholders involved in national giga-project programmes specifically. Nor has anyone examined agile adoption inside a giga-project environment itself, or the institutional conditions particular to Saudi Arabia's construction sector, where Alotaibi et al. (2025) have already documented serious project control and delivery weaknesses under conventional project management arrangements, without asking whether agile practices were present or connected to those outcomes. What this leaves is a literature that makes agile look promising outside software, but only in fairly general terms; it says little about whether the same principles hold under the rigid environmental and structural tolerances that separate construction megaprojects from software projects, or from smaller, single-site construction work.

This matters directly to the people delivering these giga-projects. Contractors and project management professionals face constant pressure to move faster as contract values and project counts keep climbing (Arab News, 2025), but nothing in the literature tells them which project management approaches actually improve outcomes at this scale. If giga-project developers and their contracted teams knew whether, and through which specific practices, agile project management relates to project success, that could

shape procurement, staffing, and governance decisions instead of resting on the untested assumption that what works in software transfers directly to megaproject construction. Following the structure Creswell (2014) recommends for introducing a research problem, the present study responds to this gap by examining the relationship between agile project management practices and project success within Saudi Arabia's giga-project construction sector, drawing on the perceptions of project management professionals working within it. Whether that relationship holds is still an open question. It may work the way it does in software and other industries, or the fixed-site realities and regulatory approval processes of megaproject construction may weaken or change it. At present, neither possibility is empirically supported.

1.2 Research Problem

The background above points to a specific problem. Agile project management practices have been linked to improved project success in software development and, increasingly, in other industries. But their relationship to project success within construction megaprojects, and within Saudi Arabia's giga-project sector specifically, remains largely untested. This gap has both a theoretical dimension and a practical one, and together they frame the research question guiding this study.

1.2.1 Theoretical Gaps

Previous research has established that agile project management practices are positively associated with project success in software development and other cross-industry contexts (Conforto et al., 2014; Serrador & Pinto, 2015). While the efficacy of these practices is well-documented in software and other flexible industries, no equivalent account exists for construction megaprojects, where regulatory approval cycles, safety certification requirements, and the sequencing of physical site work limit how iterative or adaptive a project team can actually be. Agile theory, in other words, has been validated within flexible operating environments, but not within the rigid, high-stakes environment that giga-project construction represents.

1.2.2 Practical Gaps

Few empirical studies have examined agile project management adoption, or its relationship to project success, within Saudi Arabia's giga-project construction sector specifically. This leaves an applied gap: how do project management professionals in this environment currently apply, or how might they apply, agile principles to improve delivery outcomes?

Synthesizing these theoretical and practical limitations leads to the primary research inquiry: How does Agile Project Management influence Project Success in Saudi Arabia's giga-project construction sector?

1.3 Research Significance

Addressing this research problem carries both theoretical and practical significance.

1.3.1 At the Theoretical Level

This study builds on agile project management theory as set out in the Manifesto for Agile Software Development (Beck et al., 2001), and on project success theory developed through the iron triangle tradition and its later extensions (Atkinson, 1999; Pinto & Slevin, 1987). This study does not propose new theory; rather, it tests whether an established theoretical relationship holds under conditions it has not previously faced. Agile principles were developed for, and remain most extensively studied within, software development, and the cross-industry evidence available to date (Conforto et al., 2014; Serrador & Pinto, 2015) has never been tested against the irreversible nature of physical infrastructure delivery, where design and construction errors cannot be reversed the way a software release can be rolled back. Testing the relationship between the five recognized agile dimensions and project success within Saudi Arabia's giga-project sector is, in effect, a test of how far this theoretical relationship travels beyond its original context. The theoretical contribution is modest but concrete: the findings will indicate whether agile project management theory, as currently specified, extends to complex physical construction megaprojects, or whether the sector's structural constraints mean the theory requires qualification before it can be applied here with confidence.

1.3.2 At the practical level

At the practical level, this study matters to the project management professionals and contractors responsible for delivering Saudi Arabia's giga-projects. Its findings could tell giga-project managers which specific agile practices, among iterative planning, cross-functional collaboration, adaptive scope management, stakeholder collaboration, and continuous improvement, show the strongest association with project success in this sector. That would let implementation effort go where it actually helps, rather than adopting agile practices wholesale on the assumption that every dimension transfers equally. Procurement criteria, project governance structures, and training investment for giga-project delivery teams could all be shaped by that kind of finding. This study is limited, however, to examining statistical associations between agile practices and project delivery success; it does not test causal claims. The 64 percent schedule-overrun and 53 percent cost-overrun rates documented by Alotaibi et al. (2025) were measured under conventional project management arrangements, and establishing whether agile practices would reduce these rates falls outside the scope of a cross-sectional design. What this study can establish is whether an association exists between the two, which is the precondition for testing that stronger causal claim in future research.

References

- Alotaibi, R., Sohail, M., & Soetanto, R. (2025). Modelling project control system effectiveness in Saudi Arabian construction project delivery. *Buildings*, 15(18), Article 3426. <https://doi.org/10.3390/buildings15183426>
- Arab News. (2025, October 8). *Saudi Arabia's giga-projects push contract awards up 20% to \$196bn in 2025: Knight Frank*.
<https://www.arabnews.com/node/2617929/business-economy>
- Atkinson, R. (1999). Project management: Cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International Journal of Project Management*, 17(6), 337–342.
[https://doi.org/10.1016/S0263-7863\(98\)00069-6](https://doi.org/10.1016/S0263-7863(98)00069-6)
- Beck, K., Beedle, M., van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., Grenning, J., Highsmith, J., Hunt, A., Jeffries, R., Kern, J., Marick, B., Martin, R. C., Mellor, S., Schwaber, K., Sutherland, J., & Thomas, D. (2001). *Manifesto for agile software development*. <https://agilemanifesto.org/>
- Conforto, E. C., Salum, F., Amaral, D. C., da Silva, S. L., & Magnanini de Almeida, L. F. (2014). Can agile project management be adopted by industries other than software development? *Project Management Journal*, 45(3), 21–34.
<https://doi.org/10.1002/pmj.21410>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

- Pinto, J. K., & Slevin, D. P. (1987). Critical factors in successful project implementation. *IEEE Transactions on Engineering Management*, EM-34(1), 22–27. <https://doi.org/10.1109/TEM.1987.6498856>
- Serrador, P., & Pinto, J. K. (2015). Does Agile work? A quantitative analysis of agile project success. *International Journal of Project Management*, 33(5), 1040–1051. <https://doi.org/10.1016/j.ijproman.2015.01.006>
- Zamil, A. M., & Alhusban, M. (2025). Agile project management for sustainable construction: A systematic and thematic literature review. *Civil Engineering Journal*, 11(11), 4886–4909. <https://doi.org/10.28991/CEJ-2025-011-11-024>