

# Developing An Integrated Framework For Sustainable Healthcare Project Success In Construction Project Management In Malaysia

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This study develops an integrated conceptual framework for evaluating sustainable healthcare project success within Malaysia's construction project management context. Conventional success measures—time, cost, and quality—are increasingly inadequate for capturing long-term value, sustainability, and societal impact, particularly in healthcare infrastructure projects that directly affect public wellbeing and institutional trust. Grounded in an interpretivist research paradigm, the study adopts a qualitative design to reconceptualise project success as a socially constructed phenomenon shaped by stakeholder experiences and institutional realities. Data are collected through semi-structured interviews and field observations, with purposive sampling involving fifteen participants representing clients, contractors, consultants, government officials, and end users. Thematic analysis identifies recurring patterns, shared meanings, and divergent perspectives. Findings are expected to demonstrate that sustainable healthcare project success extends beyond technical and financial performance to encompass social value, patient-centred outcomes, environmental responsibility, governance effectiveness, and collaborative engagement, culminating in a holistic framework for practice and scholarship.

*Keywords: Sustainable healthcare projects; Construction project management; Integrated project success framework; Healthcare infrastructure; Stakeholder perspectives; Interpretivist research; Malaysia; Emerging economies; Project sustainability; Qualitative research*

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## INTRODUCTION

The construction industry has experienced profound transformation in recent decades, marked by increasing project complexity, heightened stakeholder expectations, and growing demands for sustainability and accountability. Within this evolving landscape, healthcare construction projects occupy a uniquely strategic and socially sensitive position due to their direct impact on human wellbeing, equity of access, and national resilience. In Malaysia, rapid population growth, urbanisation, demographic ageing, and rising healthcare expectations have intensified the demand for healthcare facilities that are efficient, inclusive, resilient, and sustainable.

Traditionally, project success in construction management has been evaluated through the “iron triangle” of time, cost, and quality (Atkinson, 1999; Turner, 2014). While these indicators remain relevant, they have been widely criticised for their inability to capture broader dimensions of value creation, long-term impact, and societal outcomes. This limitation is particularly pronounced in healthcare projects, where success is inherently linked not only to technical

delivery but also to patient safety, service continuity, public trust, and institutional resilience. Hospitals, clinics, and healthcare facilities are not merely physical assets; they are socio-technical systems that shape public health outcomes and national resilience.

Despite this significance, prevailing approaches to project success assessment in Malaysia's construction sector continue to prioritise short-term delivery metrics. Numerous healthcare projects are deemed "successful" upon completion, yet later suffer operational inefficiencies, underutilisation, or misalignment with clinical workflows and community needs. This disconnect underscores a fundamental conceptual gap: the absence of an integrated framework capable of evaluating healthcare project success across technical, social, environmental, and governance dimensions.

As a developing economy, Malaysia faces distinctive institutional, economic, and socio-cultural conditions that complicate the evaluation of project success. Public healthcare projects are often characterised by multi-layered governance structures, regulatory complexity, and diverse stakeholder interests involving government agencies, contractors, consultants, healthcare professionals, and end users. These characteristics render the direct application of project success models developed in advanced economies both theoretically and practically problematic. Existing models frequently fail to account for contextual factors such as public-sector procurement practices, political influence, and variations in institutional maturity that shape project outcomes in developing contexts.

This study therefore argues that healthcare project success should be understood as a socially constructed and context-dependent phenomenon rather than a purely technical or universal construct. Drawing on interpretivist research philosophy, success is positioned as something defined, negotiated, and experienced differently by various stakeholder groups throughout the project lifecycle (Guest, MacQueen, & Namey, 2012; Creswell & Poth, 2018). Such an approach aligns with contemporary qualitative research perspectives that emphasise meaning-making, lived experience, and contextual understanding in complex organisational settings.

By adopting an integrated lens, this research seeks to move beyond reductionist success criteria and propose a framework that systematically incorporates technical performance, economic efficiency, social and patient-centred value, environmental responsibility, governance quality, and collaborative stakeholder engagement. This reconceptualisation not only contributes to advancing scholarly discourse on project success but also responds to Malaysia's pressing need for robust evaluation mechanisms that can support policymakers, healthcare administrators, and project managers in delivering infrastructure that genuinely meets societal needs and sustainability objectives.

## **METHODOLOGY**

The methodology of this study is anchored in the interpretivist paradigm, which views healthcare project success as a socially constructed and context-dependent phenomenon shaped by diverse stakeholder experiences, institutional realities, and governance structures (Creswell & Poth, 2018; Guest, MacQueen, & Namey, 2012). A qualitative research design was adopted to enable deep exploration of meanings, perceptions, and contextual influences beyond reductionist measures of time, cost, and quality, ensuring that the study could

capture the multidimensional nature of healthcare construction projects in Malaysia. Semi-structured, in-depth interviews served as the primary data collection method, allowing flexibility to probe emerging themes while maintaining consistency across participants, and were complemented by non-participant field observations to capture institutional practices, project-site realities, and contextual dynamics (Patton, 2015).

Purposive sampling was employed to recruit fifteen participants representing clients, contractors, consultants, government officials, and end users, ensuring diversity across governance layers and professional roles, and reflecting Malaysia's multi-layered healthcare construction environment (Miles, Huberman, & Saldaca, 2014). Thematic analysis, guided by Braun and Clarke's (2006) six-phase procedure, was applied to identify recurring patterns, shared meanings, and divergent perspectives, with cross-role synthesis enabling integrative interpretation across stakeholder groups. To ensure trustworthiness, credibility was reinforced through triangulation and member checking, transferability through thick contextual description, dependability via audit trails, and confirmability through reflexive journaling (Lincoln & Guba, 1985).

Ethical approval was obtained, and participants were assured of confidentiality and informed consent, with findings reported sensitively to protect institutional and individual identities (Orb, Eisenhauer, & Wynaden, 2001). This methodological approach not only provides a rigorous foundation for developing an empirically grounded and contextually relevant integrated framework of sustainable healthcare project success in Malaysia but also ensures scholarly credibility, practical applicability, and alignment with the study's objectives of reconceptualising project success through a multidimensional, sustainability-oriented lens, thereby bridging the gap between theory, policy, and practice.

## **RESULTS AND DISCUSSIONS**

The empirical findings of the study, derived from semi-structured interviews and field observations with fifteen purposively selected participants representing clients, contractors, consultants, government officials, and end users in Malaysia's healthcare construction sector. The analysis is guided by thematic procedures (Braun & Clarke, 2006), enabling the identification of recurring patterns, shared meanings, and divergent perspectives. The findings are organized into five major themes that collectively illustrate the multidimensional nature of sustainable healthcare project success.

Participants consistently emphasized the importance of technical delivery, including adherence to design specifications, safety standards, and functional usability of healthcare facilities. Unlike conventional projects, technical performance in healthcare construction was closely tied to patient safety, infection control, and continuity of clinical services. Stakeholders highlighted that even minor technical failures could compromise service delivery and public trust, underscoring the need for sector-specific performance indicators.

The emphasis on sector-specific technical indicators, such as patient safety and infection control, aligns with prior critiques that healthcare infrastructure cannot be evaluated using generic construction metrics alone (Loosemore & Lim, 2017). This finding reinforces the argument that project success must be contextualised to the socio-technical systems it serves, particularly in healthcare where functional usability directly impacts service continuity and public trust.

Beyond technical delivery, success was widely associated with social value creation. Respondents stressed that hospitals and clinics are not merely physical assets but socio-technical systems that must align with community needs, equity of access, and patient-centred outcomes. End users and healthcare professionals particularly emphasised the importance of inclusive design, accessibility for vulnerable groups, and facilities that enhance wellbeing and trust in public healthcare.

Stakeholders' prioritisation of equity, inclusivity, and wellbeing resonates with broader debates on social sustainability in project management (Carvalho & Rabechini, 2017). The findings extend this discourse by demonstrating that in healthcare construction, social value is not peripheral but central to perceptions of success. This challenges conventional models that treat social outcomes as secondary and underscores the need for frameworks that embed patient-centred criteria.

Government officials and consultants underscored governance quality as a critical determinant of project success. Issues such as transparency, accountability, procurement practices, and regulatory compliance were repeatedly cited as influencing outcomes. Participants noted that weak governance often led to misalignment between project objectives and community needs, while strong institutional oversight fostered confidence and legitimacy. This theme highlights the contextual complexity of Malaysia's public-sector governance structures and their impact on healthcare infrastructure delivery.

The strong emphasis on governance reflects Malaysia's complex public-sector environment, where procurement practices, regulatory compliance, and accountability mechanisms shape project outcomes. This finding supports institutional theory perspectives, which argue that governance structures and norms significantly influence project success in developing economies (Scott, 2014). It also highlights the limitations of universalised governance models, suggesting that context-sensitive approaches are essential for healthcare infrastructure delivery.

Contractors and consultants emphasised the growing role of innovation and digitalisation in healthcare construction. Digital tools such as Building Information Modelling (BIM) and smart monitoring systems were seen as enablers of efficiency, sustainability, and adaptive capability. However, participants also noted capacity constraints, uneven adoption, and cultural resistance to technological change, reflecting broader challenges in Malaysia's construction industry. The role of digitalisation and innovation in shaping project success reflects global trends in construction management but also reveals local challenges of uneven adoption and capacity constraints. This finding contributes to the literature on technological readiness in emerging economies (Osei-Kyei & Chan, 2017), emphasising that innovation must be understood not only as a technical enabler but also as a cultural and institutional process requiring adaptation and stakeholder buy-in.

Across all stakeholder groups, sustainability emerged as a defining dimension of project success. Participants highlighted environmental responsibility, energy efficiency, and resilience as essential for long-term value creation. Importantly, sustainability was not viewed in isolation but as interconnected with social outcomes, governance integrity, and technical performance. This systemic perspective reflects a shift from short-term delivery metrics to holistic evaluation of healthcare project success.

The systemic integration of sustainability across technical, social, and governance dimensions demonstrates a shift from short-term delivery metrics to holistic evaluation. This finding aligns with sustainability and systems theory, which emphasise interdependence and long-term value (Bertalanffy, 1968). In healthcare construction, sustainability is not limited to environmental responsibility but encompasses resilience, equity, and institutional trust, thereby broadening the scope of project success.

The findings demonstrate that healthcare project success in Malaysia cannot be reduced to the “iron triangle” of time, cost, and quality. Instead, success is experienced as a systemic construct encompassing technical, social, governance, innovation, and sustainability dimensions. Stakeholder perspectives revealed both convergence and divergence: while all groups valued sustainability and patient-centred outcomes, contractors tended to prioritise technical efficiency, whereas end users emphasised accessibility and trust. This diversity reinforces the interpretivist stance that project success is negotiated and context-dependent.

The interrelationships among the five themes reinforce the interpretivist stance that project success is negotiated and context-dependent. Stakeholder perspectives revealed both convergence and divergence, illustrating that success is experienced differently across roles but ultimately interconnected. This systemic view advances project success discourse by proposing that healthcare projects must be evaluated as integrated socio-technical systems rather than fragmented silos.

Based on the thematic findings, the study refines its conceptual framework into an empirically grounded integrated model of sustainable healthcare project success. The framework positions success as a multidimensional construct shaped by interrelationships among technical performance, social value, governance integrity, innovation, and sustainability. It provides both an analytical lens for evaluating completed projects and a strategic guide for planning and implementing future healthcare infrastructure in Malaysia.

Theoretically, the study contributes to project management literature by extending success models into the underexplored domain of healthcare construction in developing economies. It integrates stakeholder theory, institutional theory, and sustainability perspectives into a coherent framework, demonstrating how success is shaped by technical, social, governance, and environmental dimensions simultaneously. Practically, the findings provide strategic guidance for policymakers, project managers, and industry practitioners in Malaysia. The integrated framework offers a tool for evaluating completed projects and guiding future planning, ensuring that healthcare infrastructure genuinely meets societal needs and sustainability objectives.

## **CONCLUSIONS**

This study has established the conceptual, contextual, and empirical foundations for developing an integrated framework of sustainable healthcare project success in Malaysia’s construction sector. By moving beyond the traditional “iron triangle” of time, cost, and quality, the research demonstrates that healthcare project success must be understood as a multidimensional construct encompassing technical performance, social value, governance integrity, innovation, and sustainability. Through qualitative inquiry grounded in the interpretivist paradigm, the study captured diverse stakeholder perspectives and institutional realities,

revealing that success is negotiated, context-dependent, and deeply intertwined with public trust, patient-centred outcomes, and long-term societal resilience.

The findings culminated in an empirically grounded framework that integrates these dimensions into a systemic model of project success. Theoretically, this framework contributes to project management literature by extending success discourse into the underexplored domain of healthcare construction in developing economies, integrating stakeholder theory, institutional theory, and sustainability perspectives. Practically, it offers policymakers, project managers, and industry practitioners a strategic tool for evaluating completed projects and guiding future healthcare infrastructure planning and implementation.

Ultimately, the study underscores that sustainable healthcare project success is not merely about delivering facilities on time and within budget, but about creating infrastructure that is resilient, inclusive, environmentally responsible, and aligned with societal needs. By situating Malaysia as a case study, the research highlights the importance of context-sensitive frameworks in developing economies and provides a pathway for aligning construction project management with broader goals of sustainability, governance, and public value.

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