

Project Success and Professional Perceptions of Public Value in Small-Scale Urban Infrastructure: A Case Study of Green Point Dome Project, South Africa

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Abstract

Small-scale urban infrastructure projects are under-represented in project management research, particularly regarding how success and long-term public value are understood beyond traditional time, cost, and quality metrics. Existing studies largely emphasise operational performance, offering limited insight into practitioner perceptions of value in complex, publicly oriented contexts. This study addresses this gap by examining how technical, managerial, and planning mechanisms shape professional perceptions of project success and sustained public value. A mixed-methods single-case study was conducted on the Green Point Dome (Cape Town, South Africa), a 3D mass timber structure with educational gardens, selected for its innovation and stakeholder complexity. Data were collected using a structured self-administered survey (Likert-scale and open-ended items) from 17 professionals involved in project delivery. Quantitative data were analysed using descriptive statistics, while qualitative responses underwent thematic analysis. Findings show that perceived success is more strongly linked to collaboration, stakeholder engagement, and adaptive planning than to traditional metrics (on-time: 11.8%; on-budget: 23.5%). Long-term public value especially educational use (88.2%), accessibility (82.4%), and cultural relevance (82.4%) emerged as the dominant dimension. Despite its small sample (n=17) and single-case scope, the study highlights the central role of governance and collaborative processes in shaping perceived success and value.

Keyword: project success; public value; urban infrastructure; collaborative governance; infrastructure planning; stakeholder engagement

1. Introduction

Urban small- to medium-scale infrastructure projects remain underexamined in project management research (Jacobsson & Jęlocha, 2021; Lundin et al., 2015). Here, small-scale denotes projects under ZAR 10 million (USD 410 000), single-site, and of limited organisational complexity though such projects can still involve technical innovation and complex stakeholder interdependence (Van Marrewijk et al., 2008). The study adopted City of Cape Town stage guide review, complexity matrix that define small (less than 10 million), medium m and large projects (City of Cape Town, 2025). While large-scale infrastructure dominates scholarship on governance, finance, and

delivery (Denicol et al., 2020; Flyvbjerg, 2014), smaller public projects community, educational, and cultural facilities operate in distinct contexts requiring closer study (Cheruiyot, 2024; Companie, 2023). Despite their size, they often entail intricate stakeholder environments (Aaltonen & Kujala, 2016), tight budgets, and ambitions for enduring community impact.

The Green Point Dome in Cape Town exemplifies this category (See Figure 1). Delivered at ZAR 7.8 million, it is a timber dome with integrated educational gardens and represents a world-first three-dimensional mass-timber configuration. The project combined engineering innovation, multidisciplinary collaboration, community engagement, and public funding, and received multiple awards for engineering, sustainability, and project management excellence (HHO Consulting Engineers, 2025; Klaaren & Watermeyer, 2022).

Traditional project success metrics emphasise the “iron triangle” of time, cost, and quality (Atkinson, 1999). Contemporary research, however, argues that this is insufficient for public infrastructure, where long-term social, environmental, and cultural outcomes matter (Silvius & Schipper, 2020). The concept of public value extends evaluation beyond outputs to broader societal benefits (Moore, 1995, 2013), though it is criticised for ambiguous operationalisation and for masking contestation over what constitutes value (Rhodes & Wanna, 2007; Dahl & Soss, 2014).

This study addresses the gap between project success evaluation and long-term public value in small-scale

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Figure 1: The Green Point Dome, Cape Town
Source: (MEWA Engineering, 2025)

urban infrastructure. Using a mixed-methods case study of the Green Point Dome, it examines how project professionals perceive success, which delivery and planning mechanisms they associate with positive outcomes, and how long-term value informs these assessments. The analysis is limited to professional perspectives; community and end-user views were not included.

2. Literature Review

2.1 Project success in construction and infrastructure

Conceptualisations of project success have expanded beyond the traditional “iron triangle” of time, cost, and quality (Atkinson, 1999). Later work incorporates stakeholder satisfaction, organisational learning, and strategic alignment (Cooke-Davies, 2002). Baccarini’s (1999) distinction between project management success (delivery efficiency) and product success (long-term effectiveness) remains influential. In public infrastructure, success is inherently more complex due to multiple stakeholders (Aaltonen & Kujala, 2016; Freeman, 1984), long time horizons, and intangible outcomes (Samset, 2010).

2.2 Public value and long-term benefit

Public value theory reframes success in terms of societal outcomes rather than outputs (Moore, 1995, 2013; Benington & Moore, 2011; Meynhardt, 2015). In infrastructure, this includes accessibility, sustainability, cultural relevance, and intergenerational equity (Gilbert et al., 2022). However, critics highlight its ambiguous operationalisation and tendency to obscure stakeholder conflict and assumed consensus (Rhodes & Wana,

2007). Accordingly, this study treats public value as professionally perceived, not objective.

2.3 Governance, planning and innovation in infrastructure projects

Planning and governance particularly staged planning, cross-disciplinary collaboration, and stakeholder engagement are key to project success (Davis, 2017; Eriksson & Szentes, 2017). Innovative projects, lacking established standards, require stronger governance frameworks (Brady & Davies, 2014; Denicol et al., 2020). Effective planning plays a central role in risk mitigation.

Timber construction is increasingly valued for environmental benefits (Ramage et al., 2017), yet uptake in South Africa is constrained by limited supply chains and regulatory barriers (Kunze & Pienaar, 2020). It therefore provides a lens for examining how technical innovation interacts with governance and planning.

2.5 Conceptual framework

The study conceptualises project success as emerging from interactions between technical innovation, governance and planning, stakeholder collaboration, and public value outcomes (See Figure 2). Technical innovation introduces complexity, requiring coordinated governance and collaboration, which in turn influence long-term public value and shape professional perceptions of success beyond traditional metrics. The conceptual framework guiding this study is presented in Figure 2.

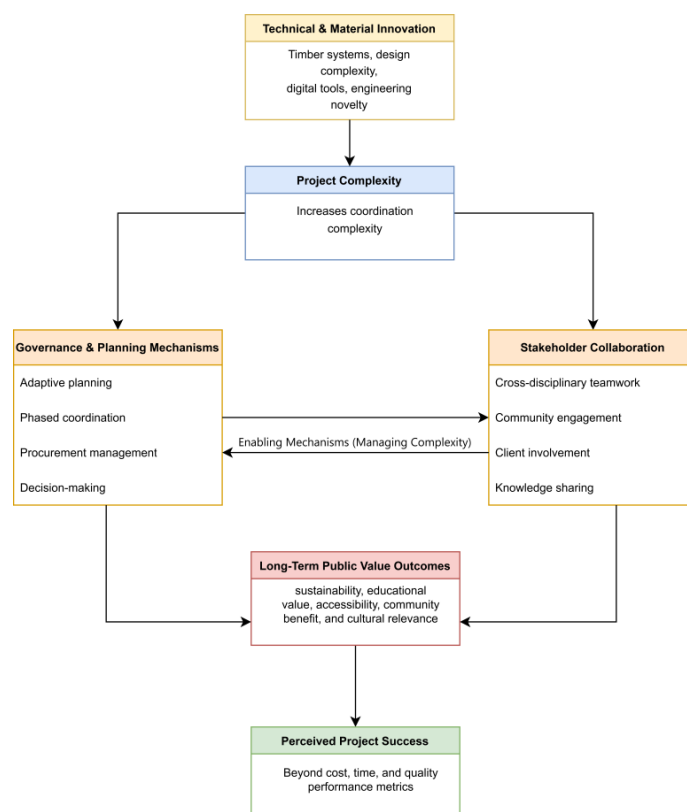


Figure 2: Conceptual Framework

The framework proposes that technical innovation drives project complexity, which must be managed through the interaction of governance and stakeholder collaboration. These enabling mechanisms influence the extent to which projects generate long-term public value, which in turn shapes overall perceptions of project success beyond traditional performance measures.

3 Research Methodology

3.1 Research design

This study adopts a mixed-methods case study design (Yin, 2018). The Green Point Dome project was purposively selected as an information-rich case due to its uniqueness in South Africa, innovative design, stakeholder complexity, and external validation through awards (HHO Consulting Engineers, 2025). The actual capital cost was ZAR 7.8 million (approximately USD 410 000 at the time of construction), placing it within the small-scale definition. The participant were asked to complete interview or survey of which all selected survey.

3.2 Case context

The dome is situated within the Green Point Urban Park in Cape Town (City of Cape Town, 2024; Companie & Windapo, 2024). The structure consists of a timber dome constructed using laminated veneer lumber (LVL) and glulam components, integrated with an

experiential education garden. Stakeholders included architects, engineers, quantity surveyors, project managers, municipal representatives, and community actors. Technical achievements include 20 curved glulam beams (each 200 kg) radiating from a central compression ring (HHO Consulting Engineers, 2025; MEWA Engineering, 2025).

3.3 Data collection

A structured questionnaire was administered electronically to 23 professionals involved in the project's planning, design, and construction; 17 valid responses were received (73.9%). The instrument included closed- and open-ended items covering respondent profile, delivery mechanisms, perceived public value, and project success. The sample reflects key professional roles (82% professionally registered and 18% non-registered); community and end-user perspectives were excluded by design, limiting conclusions on broader public value.

Data were collected in 2024, approximately two years post-completion, enabling reflective yet recent insights, though focused on anticipated rather than realised long-term value. Ethical protocols (voluntary participation, informed consent) were followed, and no conflicts of interest were declared. The authors are independent academics with no project involvement, though prior research interests may introduce theoretical bias.

Quantitative data were analysed descriptively (frequencies, medians), with Likert items treated as ordinal; no inferential analysis was undertaken (n=17). Qualitative responses were examined through a thematic analysis.

Limitations include the single-case design, small sample, gender imbalance, reliance on self-reported perceptions, and absence of longitudinal and community perspectives. Findings are therefore indicative rather than generalisable.

4 Findings and Discussion

The sample (n=17) comprised predominantly 16 male (94.1%) and 1 female (0.059%), experienced built-environment professionals, with over half exceeding 10 years' experience and 52.9% professionally registered.

The results reflect as per table 1, planning perceptions were generally positive (64.7%), though not uniform. Collaboration, digital tools (both 82.4%),

“The dome... genuinely owned by the people they serve.” (R17)

While most (82.4%) viewed planning and long-term goals as well integrated, critical perspectives mainly from execution-phase participants highlighted coordination gaps:

“Not involved sufficiently in planning... execution stage was very poor.” (R16)

Overall, findings indicate that governance, collaboration, and adaptive planning are central to perceived project success and public value.

In line with the framework, governance and collaboration processes were strongly associated with the generation of long-term public value outcomes. The prioritisation of user satisfaction (76.5%) and long-term community benefit (64.7%) confirms that public value outcomes are central to how project success is perceived beyond traditional performance metrics.

Table 1: Summary of Key Findings Across Dimensions (n=17)

Dimension	Key Indicators	Dominant Findings (%)	Interpretation
Planning & Delivery	Collaboration, digital tools, stakeholder input	82.4%, 82.4%, 64.7%	Emphasis on integrated, cross-disciplinary coordination
Long-Term Value	Education, accessibility, cultural fit	88.2%, 82.4%, 82.4%	Social and functional value prioritised
Success Metrics	User satisfaction, community benefit	76.5%, 64.7%	Shift toward value-based success definitions
Traditional Metrics	Time, cost	11.8%, 23.5%	Deprioritised in professional assessment

and stakeholder engagement (64.7%) emerged as dominant delivery mechanisms. Qualitative responses emphasised the importance of coordination and adaptability in managing technical complexity:

“Daily coordination... brought all stakeholders together to understand the new innovative design.” (R9)

“The ability... to adapt and modify designs as the project progressed was critical.” (R4)

Strong consensus (88.2%) indicated that the project was designed to benefit future users. Long-term value was primarily associated with educational use (88.2%), accessibility (82.4%), and cultural fit (82.4%), outweighing material durability.

All respondents agreed that success should include social and environmental outcomes. User satisfaction (76.5%) and long-term community benefit (64.7%) ranked highest, while time (11.8%) and cost (23.5%) were deprioritised.

5 Results and Discussion

5.1 Interpretation of Findings

Findings provide indicative support that, in small-scale innovative infrastructure, managerial and planning mechanisms are more strongly associated with perceived success than traditional metrics. High levels of collaboration and technology use (both 82.4%), supported by qualitative emphasis on coordination and adaptability, suggest governance processes are central to delivery. These findings support previous research emphasising stakeholder collaboration as a critical determinant of infrastructure project success (Aaltonen & Kujala, 2016; Davis, 2017). The prominence of governance and adaptive planning also aligns with Brady and Davies (2014), who argue that innovative projects require stronger coordination mechanisms to manage complexity.

Furthermore, the prioritisation of social and community outcomes over traditional delivery metrics supports Silvius and Schipper's (2020) contention that contemporary project success extends beyond the iron triangle toward broader stakeholder value creation. The

findings are similarly consistent with Moore's (1995; 2013) public value perspective, which emphasises societal benefits as a fundamental dimension of public-sector performance. Lower emphasis on formal staging (47.1%) and varied planning assessments indicates an adaptive, iterative approach consistent with innovation literature. A key insight is the dominance of long-term public value. Universal agreement (100%) that success includes social and environmental outcomes, alongside the prioritisation of user satisfaction (76.5%) and community benefit (64.7%), reflects a shift toward value-based evaluation. Educational use and accessibility further reinforce this orientation. However, the absence of community perspectives limits claims about realised public value. Technical innovation (timber) appears to act indirectly driving coordination complexity rather than independently determining success suggesting that governance capability mediates innovation outcomes.

5.2 Implications for practice

The findings carry several implications for public infrastructure planning and delivery, particularly in South African and similar Global South contexts. First, procurement and governance frameworks should explicitly accommodate expanded success criteria. Current public-sector procurement models in South Africa remain heavily weighted toward cost and time compliance (National Treasury, 2022; Republic of South Africa, 2017). Reforms incorporating social value, user satisfaction, and long-term benefit metrics for example, weighted criteria in tender evaluations that increase the proportion assigned to social and environmental outcomes beyond current compliance-heavy frameworks would align more closely with professional perceptions of genuine project success.

Second, investment in cross-disciplinary collaboration mechanisms integrated project delivery models, digital collaboration platforms (e.g., Building Information Modelling), structured stakeholder forums may yield returns that exceed those from technical optimisation alone. For small-scale projects with limited budgets, low-cost coordination mechanisms (regular cross-disciplinary workshops, shared digital dashboards) can be effective.

Third, continuous monitoring and adaptive management are essential. The divergence between the majority positive assessment and minority critical perspectives on planning integration highlights that even projects achieving overall positive evaluation may have process deficiencies that undermine value creation for particular stakeholder groups. Post-occupancy evaluations and lifecycle asset management plans should be contractually required.

Fourth, contractor capability development should address the gap identified by respondents: the tendency

to appoint the lowest-cost contractor without sufficient quality weighting. Implementing a quality-cost ratio that increases the weighting of technical and capability criteria relative to price (for example, from the commonly used 90:10 toward a more balanced 70:30 or 60:40) would help address this, consistent with the National Treasury's (2022) emphasis on value-for-money over lowest-cost procurement.

5.3 Theoretical contribution

This study contributes to project management and infrastructure literature in three important ways. First, it extends project success literature by demonstrating that professional perceptions in small-scale urban infrastructure projects prioritise public value outcomes, such as user satisfaction, educational benefit, accessibility, and community benefit, over traditional delivery measures of time and cost. Second, the findings provide empirical support for the argument that governance capability, stakeholder collaboration, and adaptive planning are central mechanisms through which technical innovation contributes to project success.

The study therefore suggests that governance and collaborative processes mediate the relationship between innovation and perceived project success. Third, the study contributes context-specific evidence from South Africa and the broader Global South, where empirical research on small-scale urban infrastructure remains limited. By focusing on a small-scale public infrastructure project, the research broadens understanding of how project success and public value are conceptualised outside the large infrastructure and megaproject contexts that dominate existing scholarship.

5.4 Limitations and future research

Several limitations are acknowledged. The single-case design restricts generalisability, though it provides in-depth insight into a unique project. The sample size ($n = 17$) limits advanced statistical analysis and means findings are indicative. The gender imbalance (94.1% male) reflects sectoral demographics but may constrain diversity of perspectives. The limited representation of female professionals means that perspectives relating to relational stakeholder engagement and inclusive design may be underrepresented. The cross-sectional design captures perceptions at a single point; longitudinal assessment would be required to evaluate whether anticipated long-term benefits are realised in practice. Most critically, the absence of community and end-user voices means this study captures only one side of the public value equation.

Future research should extend this investigation through: (i) comparative case studies across multiple small-scale infrastructure projects in different South African municipalities; (ii) longitudinal benefit realisation assessment (e.g., 5–10-year post-completion

evaluation) including both professional and community perspectives; (iii) incorporation of community user perspectives alongside professional evaluations, using methods such as participatory appraisal or citizen panels; (iv) larger-sample surveys to enable inferential testing of relationships identified here; (v) experimental or quasi-experimental studies of procurement reforms (e.g., quality-weighted tendering) to establish causality; and (vi) forced-choice or budget-allocation exercises to explore what professionals prioritise when trade-offs between time, cost, and social value are made explicit.

5.5 Conclusion

This study investigated how project success and long-term public value are perceived by professionals involved in a small-scale, innovative urban infrastructure project the Green Point Dome in Cape Town, South Africa. Through structured questionnaire data from 17 practitioners, the research examined relationships between planning mechanisms, technical factors, and success definitions. The findings suggest that perceived project success is more strongly associated with managerial and planning mechanisms (cross-disciplinary collaboration, stakeholder engagement, adaptive planning) than with traditional time and cost compliance. Long-term public value encompassing educational utility, community accessibility, cultural relevance, and environmental sustainability emerges as the dominant dimension through which professionals in this study evaluate success. The innovative use of timber, while recognised as significant, contributes to success primarily through the planning and coordination demands it creates.

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- These findings contribute indicative empirical evidence that governance and planning processes are central to professional perceptions of both immediate project success and long-term public value generation in small-scale public projects. The findings suggest that procurement and evaluation frameworks should be reformed to capture the multidimensional success criteria that practitioners endorse, and that investment in collaborative planning capabilities may yield substantial returns for public infrastructure value creation. However, the exploratory single-case design, small sample, and absence of community voices mean these conclusions are hypothesis-generating rather than definitive. Future research should test these patterns across larger samples and include the perspectives of end-users to fully understand public value creation.
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