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Assessment of the Impact of Architectural Details and Supervision on Quantitative Delivery of Mega Project in Abuja, Nigeria

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Abstract: This systematic review evaluates the effect of architectural detailing and supervisory control on the quantitative delivery of mega projects in the city of Abuja, Nigeria. Despite their relevance to national development, mega projects in Abuja continue to be marred by massive cost overruns and long delays, with average cost overruns of 44.46%, and 68% of capital projects with delays for more than two years. While dominant discourse points to macro-level issues such as funding and corruption as a major contributor to these failures, the role of micro-technical processes is under synthesized. This review addresses this lack of evidence by aggregating and appraising evidence published in peer reviewed journals, institutional reports, case studies, and media investigations published between 2000 and 2025. Grounded in the theoretical integration of Project Success Theory and the Rework Cycle Model, the study used thematic and content analysis within an interpretivist approach. Findings show that architectural detailing shortcomings (as evidenced by incomplete documentation, coordination failures, and ambiguous specifications) result in cycles of rework that cost 10-20% of project costs. Weak supervisory control and lack of clear authority and communication allow these cycles to be enhanced with investigations of building collapse reporting 300+ deaths in Abuja due to supervision failures. The National Library Headquarters project is an example of such failure with a cost escalation of 2,300% over 18 years. The research proposes a conceptual framework of how comprehensive detailing and empowered supervision relate to quantitative success mediated by project governance and institutional capacity. This review concludes that the attention of micro technical processes is critical in improving mega project in Abuja in the challenging environment.

Keywords: *Architectural Detailing, Construction Supervision, Mega Projects, Cost Overruns, Project Failure, Abuja, Nigeria, Rework Cycle Model.*

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I. INTRODUCTION

Mega projects are a cornerstone of Nigeria's national development strategy, serving as catalysts for economic growth, infrastructure enhancement, and urban modernisation (Adama, 2018). These large-scale initiatives, often exceeding billions of Naira in investment, are designed to address critical needs in transportation, energy, and public facilities, thereby fostering job creation, technological advancement, and improved quality of life (African Development Bank, 2022). In Abuja, the Federal Capital Territory (FCT), this significance is amplified due to its role as a planned administrative and symbolic showcase city. Conceived in the 1970s as a modern capital to alleviate congestion in Lagos and promote national unity, Abuja has witnessed a surge in mega projects over the past two decades, including transport hubs like the Nnamdi Azikiwe International Airport Terminal, institutional complexes such as the National Assembly expansions, and commercial districts (Heinrich Böll Foundation, 2023). These developments aim to position Abuja as a regional hub, attracting investment and symbolising Nigeria's aspirations for progress (Drummond, 2025).

Despite their strategic importance, some mega projects in Abuja are notoriously plagued by quantitative failures, characterised by substantial budget overruns and protracted delays. Empirical evidence consistently points out this challenge. For instance, a study of ongoing building projects in Abuja reported average cost overruns of 44.46%, with extremes ranging from 5.56% to 216.08%, even at early completion stages (Saidu & Shakantu, 2017). Similarly, broader analyses of Nigerian public construction indicate cumulative cost and time overruns averaging 38.25%, with Abuja's projects contributing disproportionately due to their scale (Abdulkadir et al., 2017). Media and governmental reports further highlight these inefficiencies, noting that 68% of capital projects in the FCT experience delays exceeding two years, leading to abandoned sites, inflated variations, and incomplete deliverables (Infrastructure Concession

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Regulatory Commission, 2021; Budget Office of the Federation, 2023). Such underperformance not only erodes economic benefits, which is estimated at trillions in lost productivity, but also diminishes public trust and strains fiscal resources, increasing vulnerabilities in project delivery systems (African Development Bank, 2022; Okhueleigbe, 2023).

Public discourse and scholarly analyses frequently attribute these failures to macro level factors, including funding irregularities, inflation, currency fluctuations, corruption, and contractual disputes (Agusto & Co., 2024; Ogundeji & Ikpoto, 2023; The Guardian, 2024). While these systemic issues are undeniable, they often overshadow micro technical processes that directly precipitate overruns. Architectural detailing, which is the precise translation of design concepts into buildable instructions via drawings, specifications, and schedules, and supervisory control, the onsite enforcement of design intent through competent resident agents, emerge as critical yet under synthesised contributors (Abass, 2023; Jimoh et al., 2017). Existing literature addresses these elements in fragmented case studies or practitioner commentaries, lacking an integrated critique tailored to Abuja's context (Oyenuga, 2025; Dalibi, 2016). This gap hinders a comprehensive understanding of how these factors influence cost, time, and scope performance, constraining evidence based interventions.

This review addresses this gap by aggregating and critically evaluating dispersed scholarly works, industry reports, and case evidence to elucidate the role of architectural detailing and supervisory control in Abuja's mega projects. By adopting a systematic critical approach, it seeks to bridge theoretical insights, such as the Rework Cycle Model (Cooper, 1993; Love et al., 2002), with practical implications, fostering improved project outcomes. The specific objectives are to:

- Collate and synthesise evidence from existing studies on the causes of quantitative project failures in Abuja's construction industry.
- Critically analyse the specific role and impact of architectural detailing and supervisory practices as identified in these studies.
- Identify the documented consequences of poor detailing and weak supervision (e.g., rework, variations, disputes).
- Propose a conceptual framework linking robust detailing and supervision to quantitative success for guiding future practice and primary research.

II. LITERATURE REVIEW

➢ *Theoretical Foundation*

In the field of construction project management, quantitative project performance is typically grounded in Project Success Theory, which is most commonly implemented through the framework known as the "Iron Triangle" or the Triple Constraints. This theory, as articulated by Atkinson (1999), encompasses the three core elements of cost, time, and scope or quality. The underlying principle of this framework is that the successful delivery of a project relies on the careful balancing of these interconnected constraints. For example, if the scope of a project expands due to additional requirements, it often necessitates increases in either the budget or the timeline to accommodate those changes without compromising quality.

Conversely, if time is compressed to meet a tighter deadline, it may require additional resources, thereby elevating costs, or a reduction in scope to maintain feasibility. This interdependence highlights the theory's emphasis on equilibrium, where trade offs must be managed strategically to achieve overall success (Toor & Ogunlana, 2010). The Iron Triangle has been a foundational tool in project management since its conceptualisation in the mid 20th century, evolving from earlier models in manufacturing and engineering to become a standard in construction literature. It provides a straightforward metric for assessing whether a project meets its predefined objectives, making it particularly useful for stakeholders such as clients, contractors, and funders who prioritise measurable outcomes.

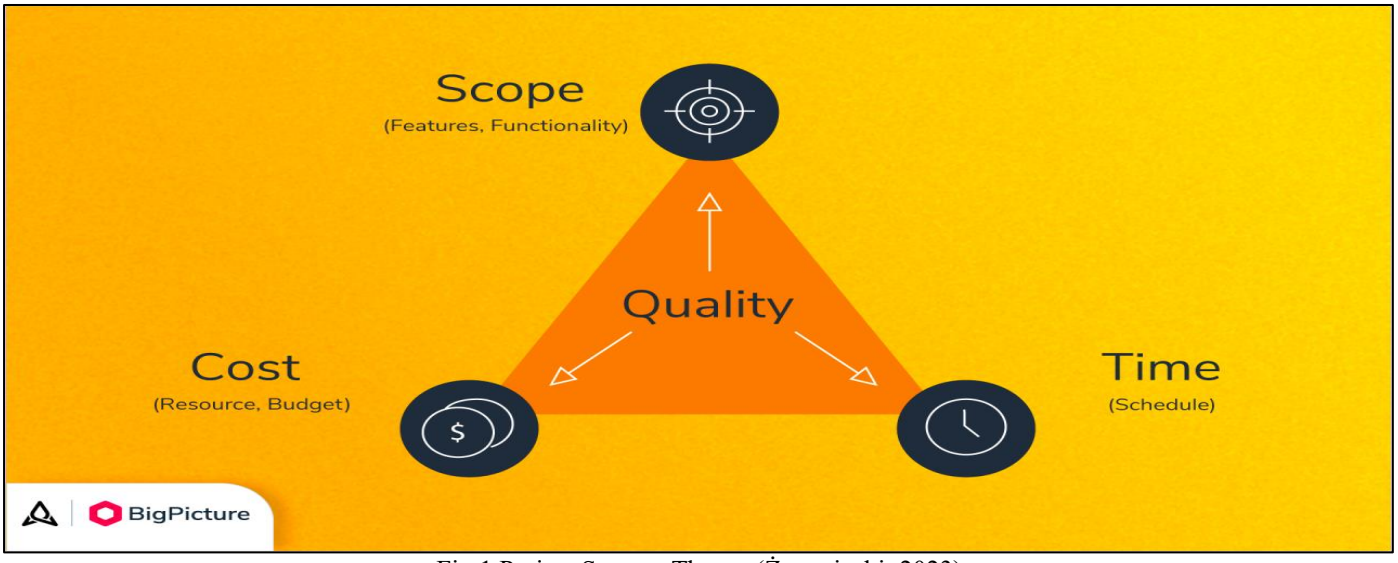

Fig 1 Project Success Theory (Żurawiecki, 2023)

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In the specific context of mega projects, which are defined by their large scale, high financial stakes, and inherent complexity, the Iron Triangle acts as a standard benchmark for measuring efficiency and effectiveness (Atkinson, 1999). Mega projects often involve multiple stakeholders, extensive supply chains, and significant public investment, which amplify the consequences of any imbalance in the constraints. For instance, a delay in time can lead to cascading effects such as increased holding costs for materials or lost revenue from delayed operations.

However, a key limitation of this theory is that it tends to emphasise overarching results, such as final budget adherence or completion dates, while offering limited explanatory power for the underlying mechanisms that cause derailment during the execution phase (Flyvbjerg, 2017). This is where technical elements, such as architectural detailing and supervisory control, become pivotal. Inadequate architectural detailing, for example, can introduce ambiguities that expand the project scope through unforeseen variation orders, resulting in increased costs and extended timelines. On the other hand, effective supervisory control ensures ongoing compliance with the original design intent, thereby preserving the integrity of the Iron Triangle by preventing deviations that could disrupt the balance.

Alongside this relatively static framework is the Rework Cycle Model, which represents a systems dynamics approach to understanding project inefficiencies. This model was initially developed by Cooper (1993) and later refined through contributions from Love & Edwards (2004), as well as Love et al. (2002). At its core, the Rework Cycle Model illustrates how shortcomings in design documentation can trigger repetitive cycles of mistakes, clarifications, corrections, and reconstruction, ultimately diminishing overall project performance. The cycle begins with an initial error or omission in the project information, such as incomplete architectural details, which creates ambiguity. This ambiguity forces construction teams, including contractors and subcontractors, to make assumptions during execution. These assumptions frequently lead to work that is later found to be incorrect or non compliant, requiring clarification through formal requests, followed by corrective actions like demolition and rebuilding.

Each iteration of this cycle not only consumes additional resources but also disrupts the project schedule, as subsequent activities are delayed while rework is addressed (Love et al., 2016). Moreover, the model emphasises that the magnitude of these cycles is often compounded by inadequate oversight, where weak supervisory control fails to detect and resolve issues at an early stage, allowing erroneous work to progress further and become more costly to rectify (Love et al., 2019).

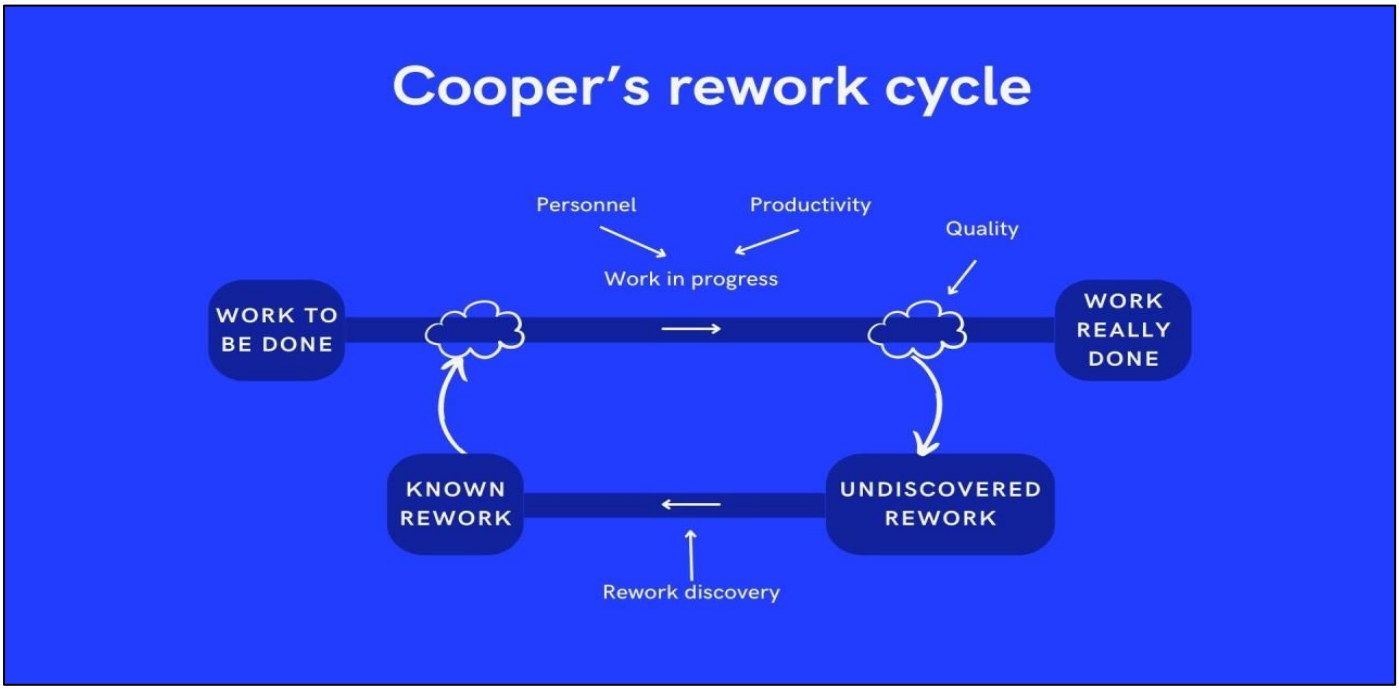

Fig 2 Coopers Rework Cycle (Melo, 2022)

Empirical research supports the model's applicability, demonstrating that rework can represent between 10% and 20% of total project expenses worldwide, establishing a direct connection between quality issues at the design stage and overruns in the Iron Triangle's cost and time constraints (Rahmandad & Hu, 2010). The Rework Cycle Model is particularly relevant in construction because it shifts the focus from isolated errors to systemic processes, revealing how initial deficiencies propagate through feedback loops.

Although the Iron Triangle provides benchmarks for success, the Rework Cycle illustrates dynamic causality, demonstrating how micro factors such as detailing can lead to widespread failures. Nonetheless, both theories presuppose a degree of rational processes and decision making within

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stable environments, which frequently neglects the contextual complexities present in developing economies. In Nigeria, for instance, external factors like political interference, erratic funding, and regulatory inconsistencies can worsen these cycles, turning minor ambiguities into major disruptions (Dimitriou et al., 2013; Opawole et al., 2020). The combination of these two theories is therefore powerful for this review. Project Success Theory outlines the metrics for failure, such as exceeded budgets or delayed completions, whereas the Rework Cycle clarifies the mechanisms involved, making it particularly suitable for examining the interplay between architectural detailing and supervisory control in Abuja's mega projects.

➢ *Architectural Detailing in Construction*

Architectural detailing involves the systematic transformation of high level design concepts into accurate and executable instructions that guide the construction process (Revizto, 2025). This includes the creation of detailed drawings, specifications, schedules, and explanatory notes that define every aspect of the project, from material selections to dimensional tolerances and interface connections between different building systems (Ching & Adams, 2014; Pham et al., 2025). The primary function of detailing is to connect the architect's creative intent with the practical realities of construction, thereby improving constructability, which refers to how well the design aligns with available materials, construction methods, and technological capabilities (Revizto, 2025).

Additionally, it enhances buildability, which focuses on the efficiency of the on site sequencing and assembly processes, ensuring that the project can be constructed logically without unnecessary complications (Ferguson, 2013; Baranda Rodriguez et al., 2025). For contractors, high quality detailing is invaluable because it provides the foundation for precise quantification of resources and accurate risk assessment during the tendering phase, which helps to avoid inflated bids driven by uncertainty. Without such clarity, contractors may build in contingencies that unnecessarily increase project costs from the outset (Ellis et al., 2021).

In essence, architectural detailing serves a fundamentally functional purpose by guaranteeing structural integrity, ensuring compliance with building codes and regulations, and minimising waste through optimised material use and reduced errors (Bizley, 2025; Eastman et al., 2018). However, scholarly debates in the literature reveal ongoing tensions regarding its priorities. For instance, Pham et al. (2025) argue for a strong emphasis on coordination depth, particularly through the use of Building Information Modelling (BIM) tools for clash detection, which identifies conflicts between architectural, structural, and mechanical elements before construction begins. In contrast, Baranda-Rodriguez et al. (2025) advocate for a focus on sequencing aspects to promote sustainability in industrial projects, such as optimising the order of assembly to reduce environmental impact. These differing views highlight a broader tension between achieving technical precision in the short term and addressing wider performance impacts, such as long term durability and ecological considerations, in the design process.

Global literature consistently connects the quality of architectural detailing to project outcomes, providing robust evidence of its role in quantitative performance. According to Eastman et al. (2018), well organised and detailed information significantly reduces the need for Requests for Information (RFIs) during construction, as it minimises ambiguities that could otherwise halt progress. This, in turn, supports better adherence to both cost estimates and project schedules.

On the other hand, inadequate detailing, which is often characterised by incompleteness, internal conflicts between drawings, or vague specifications, serves as a fundamental reason for underperformance across various contexts. Research indicates that a substantial proportion of variation orders and cost overruns can be traced directly to such deficiencies in documentation. For example, a study in Singapore revealed that over 50% of variation orders originated from design information problems (Yap et al., 2021), while investigations in Australia have attributed nearly half of all rework costs to errors in project documentation (Banihashemi et al., 2025; Love & Smith, 2016). The seminal reports from the United Kingdom, including the Latham Report (1994) and the Egan Report (1998), both criticised the entrenched industry practice of proceeding to tender with incomplete designs, identifying this as a significant factor contributing to disputes, inefficiencies, and adversarial relationships between stakeholders.

In developing economies, these challenges are often intensified by unique constraints, such as compressed design timelines due to urgent infrastructure needs, insufficient professional fees that limit thoroughness, and fragmented coordination among multidisciplinary consultants (Ofori, 2015; Olatunji et al., 2025). Empirical convergence across studies points to a range of consequences from poor detailing, including frequent RFIs that delay decision making, extensive rework that involves demolition and reconstruction, schedule disruptions, and overall costs that may increase by 10% to 30% (Love et al., 2019). Nevertheless, notable differences emerge in the literature. Critiques from Western contexts, such as those in the Latham and Egan reports, primarily emphasise flaws in procurement practices that allow incomplete designs to advance, whereas evidence from African settings shows how flattened schedules and poor multidisciplinary integration act as multipliers, worsening the issues (Zerihun et al., 2025). Therefore, architectural detailing emerges not as an aesthetic luxury but as an essential requirement for maintaining effective control over project variables, particularly in high stakes environments like mega projects where small errors can have disproportionate impacts.

➢ *Construction Supervision and Control*

If architectural detailing offers the foundational framework for a project, then construction supervision guarantees its precise and faithful implementation throughout the execution phase. Effective supervision is defined as a proactive and multifaceted function that covers systematic

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inspection, continuous monitoring, and the rigorous enforcement of compliance with contract documents, technical specifications, quality standards, and safety regulations (Rwelamila & Hall, 1995; Oyenuga, 2025). The overall effectiveness of supervision relies on three interconnected pillars, which are the technical competence and experience of the supervisory personnel, the clarity and extent of their authority to enforce decisions and halt non compliant work, and the robustness of communication and reporting protocols that facilitate timely information flow among all parties (Kamara et al., 2002). Functioning as a corrective feedback loop within the project ecosystem, supervision identifies potential deviations from the plan at an early stage, allowing for prompt resolutions that prevent minor issues from escalating into major disruptions (Asiedu & Adaku, 2020).

The role of the Clerk of Works or the Resident Architect/Engineer is particularly pivotal in this control system, serving as the client's independent representative on site to provide continuous and expert oversight (CIOB, 2014; Owolabi et al., 2014; Dutum Group, 2025). This position requires a broad multidisciplinary knowledge base to effectively bridge the gap between design documentation and practical implementation, ensuring that the built outcome aligns with the intended specifications. However, the literature reveals methodological inconsistencies in how supervision is approached. For example, Dalibi (2016) emphasises the critical importance of clear communication channels to support informed decision making and collaboration, while Asiedu & Adaku (2020) prioritise comprehensive documentation practices to drive corrective actions and maintain accountability. In the Nigerian context, the effectiveness of supervision is frequently undermined by institutional weaknesses, such as chronic under resourcing of supervisory teams, limited training opportunities, and external political interference that can dilute authority (Abubakar, 2023; Fageha & Aibinu, 2013). Conceptually, supervision complements and enhances architectural detailing by amplifying its positive effects; even the most robust set of details can be rendered ineffective without vigilant control, as this risks the exploitation of any remaining ambiguities, which aligns directly with the error amplification dynamics described in the Rework Cycle Model (Ahmed & El Sayegh, 2021).

Empirical findings from various studies affirm the substantial influence of supervision on project performance outcomes. In Abuja specifically, Jimoh et al. (2017) conducted a detailed analysis and observed that there was no statistically significant difference in labour productivity between projects led by professional supervisors and those managed by non professionals; however, they identified persistent communication barriers as a key impediment, with a mean impact score of 4.29 on a Likert scale. Dalibi (2016) provided quantitative evidence that well defined inspection routines and protocols can effectively reduce variances in cost and time, although external factors like political interference often undermine their efficacy in Nigerian public projects. Owolabi et al. (2014) went further by quantifying the determinants of supervision effectiveness, finding that when staff are empowered with clear authority and adequate resources, they can minimise deviations from planned performance by 20% to 30%. On a global scale, Ogunbiyi (2014) advocates for a shift toward preventive supervision strategies that proactively halt potential rework cycles, in stark contrast to reactive approaches that merely respond to issues after they occur, thereby allowing unauthorised changes to proliferate (Fageha & Aibinu, 2013). In large scale mega projects, weak supervision creates vulnerabilities that enable the use of substandard materials, non compliance with specifications, and overall quality compromises, as evidenced in several African case studies where similar lapses led to structural failures and extended timelines (Olatunji et al., 2025). Consequently, supervision operates as either a critical buffer that mitigates the inherent risks associated with detailing or as a catastrophic amplifier that increases them, emphasising its indispensable role in achieving quantitative success.

- *The Abuja Mega Project Context*

Abuja's large scale mega projects function within the broader and well documented difficulties of Nigeria's construction sector, which include inconsistent funding releases from government budgets, hyperinflation that erodes purchasing power, political interference in procurement and execution, and widespread corruption that distorts decision making (African Development Bank, 2022; Agusto & Co., 2024; Aibinu & Jagboro, 2002). Comprehensive studies in the literature consistently identify client related issues, financial constraints, and contractual disputes as the predominant challenges that lead to project failures (Olawale & Sun, 2010; Opawole et al., 2020). These macro level challenges create an unstable environment where projects are often initiated with ambitious goals but falter due to external pressures, such as delays in fund disbursement that halt progress mid construction or corrupt practices that favour unqualified contractors.

Nevertheless, a critical synthesis of literature uncovers that aspects of design, architectural detailing, and supervisory control often emerge as common contributors to these failures, even if they are positioned as secondary or tertiary factors in many studies. For instance, Dada (2019) primarily attributes delays to payment issues but highlights the recurring problem of "inadequate drawings" in case analyses, which triggers conflicts and rework. Similarly, Akinsiku & Babalola (2018) rank "poor supervision" among the top technical factors contributing to cost overruns in surveys of project managers in South West Nigeria, suggesting that oversight lapses allow initial design flaws to grow into larger problems. Specific case analyses of Abuja projects, although somewhat limited in peer reviewed publications, provide stark illustrations of these dynamics. Investigations into the Abuja Airport Terminal project, for example, have pointed to failures in coordination between architectural and engineering disciplines, resulting in discrepancies that necessitated costly post contract variations and legal claims (Premium Times, 2017; Nigeria Real Estate Hub, 2018). Furthermore, audit reports from the Office of the Auditor General for the Federation (OAuGF, 2021) frequently document instances of "absent supervision" and "non adherence to approved

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drawings" in Federal Capital Territory projects, leading to formal queries on value for money and recommendations for corrective measures.

Empirical studies further indicate significant systemic overruns that expresses these challenges, revealing an average cost increase of 44.46% in ongoing Abuja building projects, with extremes reaching up to 216% (Saidu & Shakantu, 2017), and a cumulative overrun rate of 38.25% across broader Nigerian initiatives (Abdulkadir et al., 2017). Asiedu & Adaku (2020) associate common issues like delays and poor workmanship with fragmented supervisory practices and gaps in documentation, which prevent early intervention. Oyenuga (2025) and Dalibi (2016) emphasise the particular difficulties posed by under resourced supervisory structures in Abuja, where design errors accumulate and compound due to insufficient on site control, further worsened by local factors such as funding instability and bureaucratic delays (Aibinu & Jagboro, 2002). A broader consensus in the literature regards design and supervision as foundational elements that underpin many failures, even within studies that are primarily macro focused (Ogunbiyi, 2014; Abubakar, 2023), with clear manifestations of Rework Cycles in the form of repeated claims, variations, and material wastage.

The global trends in construction literature converge and find even greater resonance in Abuja. Western critiques, as articulated in the Latham Report (1994) and Egan Report (1998), which condemn incomplete designs and lax oversight, parallel the systemic issues observed in Nigerian projects. However, the dynamics of developing cities introduce additional complexities, such as resource scarcity and cultural factors in stakeholder collaboration, which amplify the risks (Ofori, 2015). Contradictions within the literature are however evident as some analyses prioritise funding and corruption as the primary culprits (Agusto & Co., 2024), although deeper examination of the underlying data often uncovers that architectural detailing and supervisory lapses serve as key triggers, which initiates the chains of events that lead to overruns.

➢ *Gap in Literature*

Although global literature strongly connects architectural detailing and supervisory control to project performance (Yap et al., 2021; Love et al., 2019), studies specific to Nigeria remain disjointed and fragmented, often relegating these factors to secondary status behind broader macroeconomic issues like corruption and funding shortages (Agusto & Co., 2024; Aibinu & Jagboro, 2002). Evidence from Abuja in particular (Saidu & Shakantu, 2017; Jimoh et al., 2017) highlights certain deficiencies in these areas but does not provide a cohesive and integrated critique that applies theoretical models like the Rework Cycle to the local interplay of factors. This review directly tackles this shortfall by synthesising the available evidence, uncovering the harmful cycles that poor detailing and weak supervision create within Abuja's complex socio political and economic environment, and advocating for a conceptual framework that promotes quantitative success in future mega projects.

III. METHODOLOGY

➢ *Research Philosophy*

This study adopts an interpretivist research philosophy, which is particularly suited to investigations that seek to understand complex social phenomena through the interpretation of existing texts, narratives, and subjective accounts rather than through objective measurement or quantification. Interpretivism posits that reality is socially constructed and that knowledge is derived from the meanings individuals or groups assign to their experiences, making it ideal for critiquing literature on architectural detailing and supervisory control in mega projects (Saunders et al., 2019). In embracing interpretivism, the review acknowledges the subjective nature of project failure attributions in Nigeria, where factors like political interference or cultural expectations of supervision may shape documented evidence, thus providing a deeper understanding of the interplay between detailing quality and supervisory effectiveness in determining project outcomes.

➢ *Research Design*

The research design employed in this study is a systematic critical review, which represents a structured, transparent, and replicable method for identifying, evaluating, and synthesising existing literature to address a specific research question (Boland et al., 2017). Unlike a traditional narrative review that may be prone to bias through selective inclusion, a systematic critical review incorporates rigorous protocols to minimise subjectivity, such as predefined search strategies and explicit criteria for source appraisal. This design is chosen because it aligns with the study's aim to critically evaluate the impact of architectural detailing and supervisory control on mega project performance in Abuja, allowing for not only a summary of findings but also a critique of methodological strengths, inconsistencies, and contextual applicability in the literature.

This approach draws on frameworks like those proposed by Grant and Booth (2009), emphasising transparency in the review process to enhance credibility. In practice, the design facilitates the integration of diverse secondary data types, from peer reviewed articles to grey literature, enabling a holistic synthesis that highlights gaps, such as the underrepresentation of Abuja specific mega projects in global theories like the Rework Cycle Model.

➢ *Data Sources*

Given that this is a critical review relying exclusively on secondary data, sources were selected to provide a rich, multifaceted evidence base without the need for primary data collection. Academic databases formed the primary repository, including platforms such as Google Scholar, Scopus, JSTOR, and discipline specific ones like those hosted by the Nigerian Institute of Building (NIOB), the Nigerian Institute of Architects (NIA), and the Council for the Regulation of Engineering in Nigeria (COREN), as well as international journals focused on project management, such as the International Journal of Project Management and Construction Management and Economics.

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These databases were queried using targeted search keywords, including "Abuja construction projects," "project failure Nigeria," "cost overrun Nigeria," "architectural supervision Nigeria," "building detailing Nigeria," and "rework construction Nigeria," to capture relevant peer reviewed articles that discuss technical causes of underperformance. This selection ensures access to empirically grounded studies, offering theoretical depth and global comparisons that contextualise Abuja's challenges.

To complement academic sources and provide practical insights, grey literature was incorporated, encompassing official reports from bodies such as the Senate Committee on Works, the Federal Capital Development Authority (FCDA), and the Auditor General for the Federation. These documents, often unpublished in academic journals, offer authoritative data on real world project audits, such as performance evaluations of FCT infrastructure, revealing patterns in overruns linked to detailing and supervision.

Finally, media analysis was included, focusing on in depth investigative reports from reputable Nigerian newspapers like The Guardian, Premium Times, and The Punch, which document project delays, abandonments, and inefficiencies. This source adds timeliness and public perspective, capturing stakeholder views not always present in formal reports. Collectively, these secondary sources ensure a comprehensive dataset, balancing rigour with relevance to Abuja's unique socio economic and regulatory landscape.

➢ *Inclusion and Exclusion Criteria*

To maintain focus and quality, the review applied strict inclusion and exclusion criteria to the identified sources.

- Included materials were limited to studies and reports published between 2000 and 2025, a timeframe chosen to encompass the rapid growth of Abuja's infrastructure post 2000 while incorporating recent developments up to the current knowledge base.
- Included sources must discuss causes of delay or cost overrun in Nigerian construction, with priority given to those specifically addressing design deficiencies, documentation gaps, or supervision inadequacies, ensuring direct relevance to the research objectives.
- Studies focused exclusively on sectors outside construction, such as oil and gas or manufacturing, were excluded to avoid diluting the focus on building and infrastructure projects.
- Opinion pieces, editorials, or commentaries lacking empirical backing, such as unsubstantiated blog posts or anecdotal articles, were omitted, as they do not contribute reliable evidence for critical synthesis.
- Sources predating 2000 were excluded to emphasise contemporary practices.
- This rigorous filtering ensured that the synthesised evidence was credible, relevant, and capable of supporting robust conclusions on architectural detailing and supervisory control in Abuja's mega projects.

➢ *Data Analysis*

Data analysis in this review combined thematic analysis and content analysis to extract meaningful insights from the selected sources. Thematic analysis involved coding the literature to identify and organise recurring themes related to architectural detailing and supervision, following Braun and Clarke's (2006) six phase process; familiarisation, initial coding, theme searching, review, definition, and reporting. This method allows for interpretive depth, such as grouping narratives on "ambiguous drawings leading to claims" under a theme of "detailing induced rework," revealing how these factors mediate quantitative performance. Content analysis complemented this by systematically tallying the frequency with which terms like "inadequate detailing" and "poor supervision" were cited as causal factors in project failure studies, using a quantitative lens to measure prevalence (Krippendorff, 2018).

IV. FINDINGS AND DISCUSSION

➢ *Synthesis of Evidence on Quantitative Project Failures in Abuja*

The systematic review of literature reveals compelling evidence of quantitative failures in Abuja's mega projects, with cost and time overruns representing systemic rather than exceptional outcomes as seen in Appendix one and two. Saidu and Shakantu (2017) provided foundational empirical data through their examination of 30 ongoing building projects in Abuja, documenting cost overruns ranging from 5.56% to an alarming 216.08%, with a mean overrun of 44.46%. These figures are particularly significant given that the sampled projects were at an average completion stage of 52.4%, suggesting that final overruns may exceed documented values. The study's finding that projects at only 5% completion exhibited the highest overrun (216.08%) indicates that quantitative failures manifest early and compound throughout project lifecycles, aligning with the Rework Cycle Model's proposition that initial deficiencies trigger cascading consequences (Cooper, 1993; Love et al., 2002).

This pattern is reinforced by Abdulkadir et al. (2017), whose broader analysis of Nigerian public construction projects identified cumulative cost and time overruns averaging 38.25%, with Abuja's mega projects contributing disproportionately due to their scale and complexity. The Infrastructure Concession Regulatory Commission (2021) reported that 68% of capital projects in the Federal Capital Territory experience delays exceeding two years, a statistic that contextualises the qualitative findings from case analyses. The National Library Headquarters project exemplifies this dramatically. Being awarded in 2006 with an original contract sum of ₦8.59 billion and a 22 month completion timeline, the project stood at merely 44.6% completion after 18 years (in 2025), with projected costs exceeding ₦200 billion, which is a 2,300% escalation (The Guardian Nigeria, 2024; Moses, 2024). Such extreme cases demonstrate how quantitative failures go beyond theoretical constructs to become tangible public expenditure crises.

The African Development Bank's (2022) Country Portfolio Performance Review provides institutional

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validation of these findings, reporting that 42% of infrastructure projects in Abuja were rated "moderately unsatisfactory" or "unsatisfactory" on implementation progress. Critically, the review identified "poor quality of technical designs" in 41% of unsatisfactory projects and "weak project management capacity" in 67%, directly implicating the technical processes of detailing and supervision. This institutional evidence bridges macro level economic analyses, such as Agusto & Co.'s (2024) attribution of failures to funding irregularities and corruption, with micro technical explanations, suggesting that while macroeconomic factors create enabling environments for failure, technical deficiencies often serve as proximate triggers.

➢ *The Role and Impact of Architectural Detailing*

The evidence synthesised from multiple sources establishes architectural detailing as a critical determinant of quantitative project performance, functioning as either a risk mitigator or failure amplifier. Olanrewaju & Ogunmakinde (2020) found that Nigerian architects identified "proper detailing" as the second most effective waste minimisation strategy (mean score 4.48), with practitioners estimating that comprehensive detailing could reduce construction waste by 15-25%. This quantitative finding aligns with global evidence from Yap et al. (2021), who documented that over 50% of variation orders in construction projects originate from design information problems, and Love & Smith's (2016) attribution of nearly half of all rework costs to documentation errors.

The Abuja case studies provide concrete illustrations of these dynamics. The Nnamdi Azikiwe International Airport Terminal project experienced coordination failures between architectural and engineering disciplines, resulting in design discrepancies that necessitated costly post contract variations and legal claims (Nigeria Real Estate Hub, 2018; Premium Times, 2017). The Abuja Second Runway Project, constructed at 83% completion, required an additional $400-500 million to correct fundamental design anomalies, including a terminal location that violated the airport master plan, obstruction of the control tower creating safety hazards, and impeded fire tender access (Radio Nigeria, 2025). These cases demonstrate that detailing deficiencies transcend aesthetic or minor functional issues to create substantial safety risks and financial burdens.

The theoretical mechanisms underlying these failures are explained by the Rework Cycle Model (Cooper, 1993; Love et al., 2019). Incomplete or ambiguous architectural details create information gaps that force contractors to make assumptions during construction. These assumptions frequently produce non compliant work, triggering *Requests for Information*, formal clarifications, and ultimately corrective actions including demolition and reconstruction. Each iteration consumes additional resources and disrupts schedules, with Love et al. (2019) documenting that rework represents between 10% and 20% of total project costs globally. The Abuja evidence suggests these percentages may be conservative given the compounding effects of local factors such as compressed design timelines, insufficient professional fees limiting detailing thoroughness, and fragmented coordination among multidisciplinary consultants (Ofori, 2015; Olatunji et al., 2025).

The African Medical Centre of Excellence project, with emphasis on Building Information Modelling coordination, represents a potential counterfactual, demonstrating how robust detailing practices could prevent the failures documented in completed projects (Runsewe, 2025). However, the absence of completed, successful mega projects with documented detailing practices in the literature highlights a major evidence gap and reinforces the perception that inadequate detailing is normative rather than exceptional in Abuja's construction environment.

➢ *The Role and Impact of Supervisory Control*

Construction supervision emerges from the evidence as the critical feedback mechanism that either contains or amplifies the risks inherent in architectural documentation. Jimoh et al. (2017) provided findings from Abuja construction sites, observing no statistically significant difference in labour productivity between projects led by professional versus non professional supervisors. Rather than suggesting supervision is unimportant, this finding may indicate that professional supervisors in Abuja operate within systemic constraints that neutralise their potential effectiveness. The study's identification of communication barriers as a key impediment (mean impact score 4.29) supports this interpretation, suggesting that even qualified supervisors cannot function optimally when information flows are obstructed.

Dalibi (2016) quantified these dynamics, finding that well defined inspection protocols reduce cost and time variances but that political interference and under resourcing frequently undermine supervisory authority in Nigerian public projects. The study's Chi square analysis confirmed that "there are resultant effects of poor supervision in building construction projects at the construction and the post occupancy stages," providing statistical validation for qualitative observations. Olowolayemo (2023) extended this analysis by identifying the three major factors responsible for deficient supervision: inexperienced supervisors (mean score 4.58), lack of effective planning (mean score 4.49), and poor communication (mean score 4.45). These factors are interconnected, as inexperienced supervisors may lack the authority to enforce compliance, ineffective planning creates ambiguous supervision protocols, and poor communication prevents timely identification of deviations.

The case study evidence dramatically illustrates supervision failures. The National Library Headquarters project files documented "absent supervision" and missing critical documents, including evidence of Federal Executive Council approval for revised cost estimates and contractor undertakings to complete at approved costs (The Guardian Nigeria, 2024). The TETFund Executive Secretary confirmed that available funds could not be released due to missing documentation, which is a basic project management failure that directly implicates supervisory control (Moses, 2024). The Abuja Centenary Economic City project similarly experienced weak supervisory control allowing political

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interference and deviations from approved plans, contributing to its stalled status despite $18.5 billion in planned investment (Bello, 2025; The Guardian Nigeria, 2024).

Building collapse investigations provide the most severe evidence of supervision consequences. Ogbemudia et al. (2021) analysed 47 collapse cases in Abuja (2000-2010), identifying substandard materials (53.09%) and poor workmanship (17.28%) as primary causes, both directly attributable to inadequate supervision that fails to enforce specifications and detect non compliance. The study found that 74.1% of professionals identified "proper site supervision" as the primary mechanism for reducing collapse occurrences. Ekponyoh et al. (2025) documented 9 building collapses in Abuja resulting in 114 deaths, identifying "lack of monitoring" and "use of quacks and unapproved plan" as contributing factors, again implicating supervisory failures. These findings transform supervision from an abstract project management concern to a matter of public safety and human life.

- *Documented Consequences of Poor Detailing and Weak Supervision*

The convergence of evidence from peer reviewed studies, institutional reports, and case analyses reveals a consistent pattern of consequences flowing from inadequate detailing and weak supervision. These consequences operate at multiple levels (project specific, sectoral, and national) with compounding effects that extend beyond immediate quantitative metrics.

At the project level, rework emerges as the primary mechanism through which detailing and supervision deficiencies translate into cost and time overruns. Love et al. (2019) documented that rework represents 10-20% of project costs globally, while the Abuja evidence suggests substantially higher impacts. The National Library project's 2,300% cost escalation over 18 years, with only 44.6% completion, represents rework and delay on an extreme scale (Liman, 2025). Variation orders, identified by Yap et al. (2021) as exceeding 50% of design related changes, were documented in the Airport Terminal project where design discrepancies necessitated costly post contract variations (Premium Times, 2017). These variations not only increase costs but also disrupt project sequencing, creating cascading delays as subsequent activities await revised documentation or corrected work.

Disputes and legal claims constitute a secondary consequence with significant financial and temporal implications. The Abuja Second Runway Project saw the contractor (CCECC) abandon the site after receiving ₦30 billion of ₦90 billion allocated, citing "unacceptable contract variation" and requesting cost adjustments that the minister deemed excessive (Radio Nigeria, 2025). Such disputes consume management attention, delay dispute resolution, and often result in arbitration or litigation costs that further erode project budgets. The Senate's investigation into the Abuja Centenary City project (The Guardian Nigeria, 2024) represents the escalation of project level disputes to legislative oversight, with associated political and reputational costs.

Beyond individual projects, the cumulative effect of these failures undermines sectoral capacity and public trust. The African Development Bank (2022) estimated that implementation challenges in Nigerian infrastructure projects resulted in economic losses of approximately $2.3 billion in foregone benefits, resources that could have addressed multiple developmental priorities. The National Library's CEO articulated the reputational dimension at the World Conference of Directors of National Libraries: "Nigeria is not standing tall as far as national monuments are concerned. Every member of the participating directors would be asking what is holding the project" (The Guardian Nigeria, 2024). Such statements capture the intangible but significant costs of project failure on national prestige and international confidence.

Building collapses represent the ultimate consequence, with Ogbemudia et al. (2021) documenting over 300 deaths across 47 Abuja collapse cases and Ekponyoh et al. (2025) identifying 114 deaths in Abuja specifically. These fatalities transform project management deficiencies from technical failures to humanitarian crises, underscoring the ethical imperative of robust detailing and supervision. The finding that 82.1% of developers play a role in collapse causation (Ogbemudia et al., 2021) highlights how commercial pressures can override technical requirements when supervision is weak, allowing profit motives to compromise structural integrity.

- *Synthesis and Conceptual Integration*

The evidence synthesised in this review supports the development of a conceptual framework linking robust detailing and supervision to quantitative project success, grounded in the theoretical integration of Project Success Theory (Atkinson, 1999) and the Rework Cycle Model (Cooper, 1993; Love et al., 2002). Project Success Theory provides the metrics (cost, time, and scope adherence) against which performance is evaluated, while the Rework Cycle Model explains the mechanisms through which detailing and supervision influence these metrics.

The framework posits that complete, coordinated architectural detailing functions as a primary prevention mechanism, reducing information ambiguity and minimising the triggers for rework cycles. This aligns with Olanrewaju & Ogunmakinde's (2020) finding that proper detailing is a primary waste minimisation strategy and with the African Development Bank's (2022) identification of poor technical design quality as a major constraint. Effective detailing establishes clear benchmarks against which construction can be monitored, provides contractors with reliable information for resource quantification and sequencing, and reduces the likelihood of variation orders arising from design omissions or conflicts.

Construction supervision functions as a secondary prevention and correction mechanism, detecting deviations before they become embedded in completed work and

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enforcing compliance with documented specifications. The three pillars identified by Jimoh et al. (2017) and Dalibi (2016), technical competence, clear authority, and robust communication protocols, are essential for supervision to fulfil this role. When these pillars are weak, as documented in the National Library and Airport Terminal cases, even adequate detailing may be undermined by construction that fails to implement it correctly. Conversely, when supervision is strong, it can compensate for minor detailing deficiencies through timely clarification and correction, preventing their escalation into major rework cycles.

The interaction between detailing and supervision is therefore synergistic rather than additive. High quality detailing reduces the burden on supervision by minimising ambiguities that require interpretation and potential errors that require correction. Effective supervision amplifies the value of detailing by ensuring its faithful implementation and providing feedback that improves future detailing practice. The absence of either element creates vulnerabilities that the other cannot fully compensate for, as detailing without supervision allows construction deviations; supervision without detailing leaves supervisors without clear benchmarks against which to monitor compliance.

The Abuja context introduces moderating factors that influence this framework's operation. Political interference, documented by Dalibi (2016) and Bello (2025), can override both detailing requirements and supervisory authority, allowing decisions based on non technical criteria to compromise project integrity. Funding irregularities, identified by Agusto & Co. (2024) and the African Development Bank (2022), disrupt project continuity and may force compromises in both detailing thoroughness and supervision intensity. Inflation and currency fluctuations, cited by Saidu and Shakantu (2017), alter project economics in ways that can render original cost estimates obsolete regardless of technical performance. These contextual factors do not negate the importance of detailing and supervision but rather condition their effectiveness, suggesting that technical interventions must be accompanied by institutional reforms addressing these broader constraints.

➢ *Proposed Conceptual Framework*

Based on the synthesised evidence, this review proposes a conceptual framework for understanding and improving quantitative mega project delivery in Abuja. The framework comprises four interconnected elements:

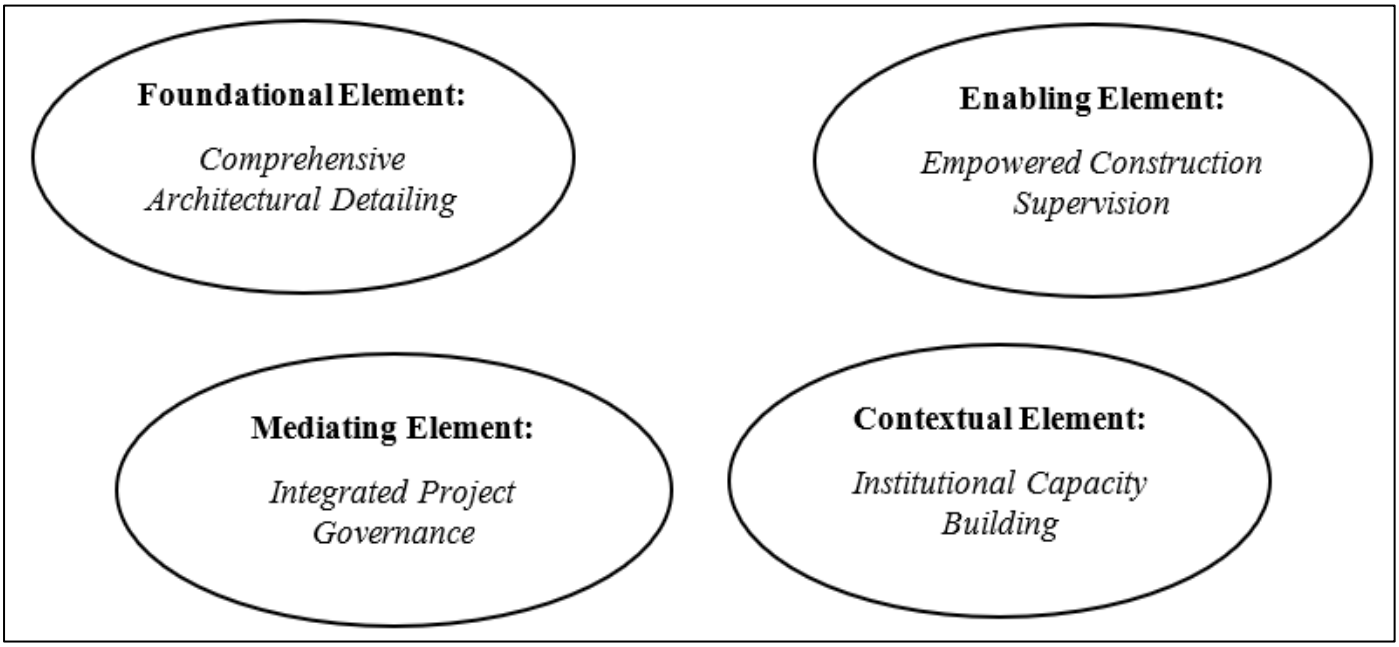

Fig 3 Proposed Conceptual Framework

- *Foundational Element*

Comprehensive architectural detailing covers complete documentation including coordinated drawings, unambiguous specifications, and integrated schedules. Building Information Modelling (BIM) adoption, as recommended by Pham et al. (2025) and Eastman et al. (2018), enhances coordination through clash detection and information consistency. Detailing must address not only architectural elements but also integration with structural, mechanical, and electrical systems. The coordination failures documented in the Airport Terminal project (Premium Times, 2017) exemplify the consequences of disciplinary silos.

- *Enabling Element*

Empowered construction supervision requires technically competent personnel with clear authority to enforce compliance and robust communication protocols linking site observations to design and management responses. The preventive supervision approach advocated by Ogunbiyi (2014), which proactively halts potential rework cycles, should replace reactive models that respond only after non compliance occurs. Supervisors must be adequately resourced and protected from political interference, addressing the vulnerabilities identified by Dalibi (2016) and Jimoh et al. (2017).

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- *Mediating Element*

Integrated project governance establishes structures and processes that support detailing and supervision effectiveness. This includes procurement models that discourage tendering with incomplete designs (Latham, 1994; Egan, 1998), payment mechanisms that maintain project continuity, and dispute resolution procedures that address conflicts without derailing progress. The National Library project's documentation failures (The Guardian Nigeria, 2024) highlight the importance of robust governance maintaining project records across administrative transitions.

- *Contextual Element*

Institutional capacity building addresses the broader environment within which projects operate. This includes professional development for detailing and supervision personnel, regulatory frameworks that enforce minimum standards, and accountability mechanisms that sanction non performance. The African Development Bank's (2022) finding that weak project management capacity characterises unsatisfactory projects underscores the need for sustained capacity investment rather than project specific interventions.

This framework posits that quantitative success defined as cost and time adherence consistent with Project Success Theory, requires the simultaneous operation of all four elements. Deficiencies in any element create vulnerabilities that, particularly when amplified by Abuja's challenging context, can trigger the rework cycles documented throughout the literature. The framework provides both an explanatory tool for understanding past failures and a prescriptive guide for designing future interventions.

V. SUMMARY OF FINDINGS

The systematic critical review has synthesised evidence from peer reviewed studies, institutional reports, and case analyses to establish that architectural detailing and supervisory control are significant determinants of quantitative mega project performance in Abuja. Cost overruns averaging 44.46% (Saidu & Shakantu, 2017) and delays exceeding two years in 68% of FCT capital projects (Infrastructure Concession Regulatory Commission, 2021) are not merely products of macroeconomic factors but reflect fundamental deficiencies in technical project delivery processes.

Architectural detailing deficiencies manifest as incomplete documentation, coordination failures, and ambiguous specifications that trigger rework cycles, variation orders, and disputes. The Airport Terminal and Second Runway projects exemplify how design errors create costly corrections and safety vulnerabilities, while the African Medical Centre of Excellence suggests an alternative trajectory when detailing receives appropriate priority.

Construction supervision failures enable these detailing deficiencies to translate into constructed defects, with inexperienced supervisors, weak authority, and poor communication allowing non compliant work to progress. Building collapse investigations provide the most stark evidence of supervision's life safety implications, with substandard materials and poor workmanship (both controllable through effective supervision) identified as primary causes.

The consequences cascade from project level rework (10-20% of costs globally; potentially higher in Abuja) through sectoral capacity erosion and reputational damage to, in extreme cases, loss of life. The National Library's 2,300% cost escalation over 18 years and the 114 deaths from Abuja building collapses represent the quantitative and human extremes of these consequences.

The proposed conceptual framework integrates these findings, positioning comprehensive detailing and empowered supervision as foundational elements whose effectiveness is mediated by project governance and contextual institutional capacity. This framework provides both theoretical integration of Project Success Theory and the Rework Cycle Model and practical guidance for improving mega project outcomes in Abuja's challenging environment.

VI. CONCLUSION

This study concludes that architectural detailing and supervisory control are not peripheral technical concerns but central determinants of quantitative mega project performance in Abuja, Nigeria. The evidence consistently demonstrates that inadequate detailing triggers rework cycles, weak supervision enables these cycles to amplify, and the consequences cascade from project level overruns through sectoral capacity erosion to, in extreme cases, loss of life. While macro level factors such as funding irregularities and political interference create enabling environments for failure, technical deficiencies in detailing and supervision serve as the proximate triggers that convert these environmental risks into actual project failures.

The study's ultimate contribution to knowledge is threefold. First, it provides an integrated synthesis of dispersed evidence on detailing and supervision in Abuja's mega projects, demonstrating that these factors are not secondary to macroeconomic explanations but operate synergistically with them. Second, it extends the application of the Rework Cycle Model to a developing economy context, revealing how contextual factors such as political interference and regulatory inconsistencies amplify the model's postulated cycles. Third, it offers a conceptual framework that explains the interrelationships between detailing, supervision, governance, and institutional capacity, providing both an analytical tool for understanding past failures and a prescriptive guide for designing future interventions.

The research problem, that is, the gap in understanding how micro technical processes influence quantitative performance, has been addressed. The evidence confirms that addressing macro level factors alone, while necessary, is insufficient. Sustainable improvement in mega project delivery requires simultaneous attention to the technical foundations of detailing and supervision, embedded within governance structures that support rather than undermine

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them, and enabled by institutional capacity that sustains good practice across administrative transitions. The study recommendations are as follows:

- Policy Recommendations: Government and regulatory bodies should mandate minimum detailing standards for all public mega projects, including requirements for coordinated drawings and unambiguous specifications. Tendering with incomplete designs should be prohibited, ensuring contractors price based on comprehensive documentation. Supervision requirements specifying minimum qualifications, site presence durations, and reporting protocols should be established and enforced. Accountability mechanisms must sanction non performance, including blacklisting of consultants responsible for projects with significant unexplained overruns. Independent project monitoring units with authority to report on compliance without political interference should be institutionalised.
- Practical Recommendations: Clients and project sponsors should recognise that investments in comprehensive detailing and empowered supervision are essential expenditures preventing exponentially larger rework costs. Project budgets must allocate adequate resources for both activities. Construction professionals should advocate for the resources, authority, and autonomy necessary to fulfil their responsibilities, recognising the ethical dimensions of their roles in ensuring structural integrity and public safety. Professional bodies should strengthen continuing development programmes focusing on detailing best practices, supervisory effectiveness, and ethical practice, while establishing mentorship programmes transferring knowledge from experienced to younger practitioners.
- Theoretical Recommendations: Future theoretical development should extend the Rework Cycle Model to incorporate contextual moderators specific to developing economies, including political interference indices, funding reliability metrics, and regulatory effectiveness measures. The proposed conceptual framework should be empirically tested and refined through primary research, examining the relative weights of its four elements across different project types and contexts.
- Future Studies: Future research should address the study limitations through primary data collection examining detailing and supervision practices in ongoing Abuja mega projects. Mixed methods approaches combining quantitative performance metrics with qualitative insights into processes and practices would enable rigorous testing of the proposed conceptual framework. Comparative studies across Nigerian cities and African capitals would expose context specific versus generalisable factors, enabling theoretical adaptation rather than uncritical application of models developed in stable environments.

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APPENDIX

APPENDIX 1: EVIDENCE OF IMPACT OF ARCHITECTURAL DETAILING AND SUPERVISION ON MEGA PROJECTS IN ABUJA

Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
Collate and synthesize evidence from existing studies on the causes of quantitative project failures in Abuja's construction industry.	Saidu, I., & Shakantu, W. (2017). An investigation into cost overruns for ongoing building projects in Abuja, Nigeria. *Acta Structilia*, *24*(1), 53-72.	Peer-reviewed journal article	Quantitative; archival data from drawings, bills of quantities, progress reports; descriptive and inferential analysis on 30 ongoing building projects in Abuja (value > ZAR100 million, public and private).	Study examined 30 ongoing building projects in Abuja, finding cost overruns ranging from 5.56% (at 90% completion, within 88% estimated time) to 216.08% (at 5% completion, within 8.3% estimated time). Average cost overrun: 44.46%. Average project completion: 52.4%. Average time adherence: 91.4% of estimated limit. Emphasizes need for ongoing monitoring to mitigate overruns, attributing failures to systemic issues like funding irregularities, inflation, and macro factors, but notes micro-technical processes as	Provides empirical baseline data on quantitative failures (cost and time overruns) in Abuja, directly supporting synthesis of causes and highlighting the disproportionate contribution of large-scale projects, bridging to micro-factors like detailing/supervision for integrated analysis.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				contributors without specific detailing/supervision data.	
	Abdulkadir, S., Muhammad, A. I., Gidado, U. M., & Nuruddeen, U. (2017). Cost and time overrun in building projects: professional attitude and incidence rate in practice. *International Journal of Economics, Commerce and Management*, *5*(8), 276-283.	Peer-reviewed journal article	Mixed methods; surveys and archival data from Nigerian public construction projects, including Abuja contributions.	Broader analysis of Nigerian public construction indicates cumulative cost and time overruns averaging 38.25%, with Abuja's mega projects contributing disproportionately due to scale. Causes include funding irregularities, inflation, currency fluctuations, corruption, and contractual disputes. Media/governmental reports note 68% of FCT capital projects experience delays >2 years, leading to abandoned sites and inflated variations.	Aggregates evidence on systemic causes of failures, emphasizing Abuja's context, which helps synthesize how macro issues interact with micro-technical elements like detailing/supervision, fostering a comprehensive understanding of quantitative underperformance.
	African Development Bank. (2022). Nigeria Country Strategy Paper 2020–2024: Mid-Term Review and 2022 Country Portfolio Performance Review. Abidjan: AfDB. https://www.afdb.org/sites/default/files/documents/projects-and-operations/nigeria_-_country_strategy_paper_2020-2024_mid-term_review_mtr_and_2022_country_portfolio_performance_review_cppr_report.pdf	Grey literature (institutional report)	Desk review, portfolio analysis, and stakeholder consultations on infrastructure	Reports on mega projects in Nigeria, including Abuja, plagued by budget overruns and delays, estimating trillions in	Contributes macroeconomic evidence on failure causes, linking to Abuja's symbolic role, and underscores the need to examine micro-contributors

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
			projects. Portfolio performance assessment of all AfDB-funded projects in Nigeria (2020-2022), including site visits, stakeholder interviews, document reviews, and performance metric analysis across 34 active projects.	lost productivity. Highlights inefficiencies in critical sectors like transportation and energy, with Abuja's projects (e.g., airport terminals) as examples of underperformance eroding economic benefits and public trust. The review found that among infrastructure projects in Abuja, 42% were rated "moderately unsatisfactory" or "unsatisfactory" on implementation progress. Key challenges identified included: "weak project management capacity" (cited in 67% of unsatisfactory projects), "delays in contract approvals" (58%), and "poor quality of technical designs" (41%). The report estimated that these implementati	like detailing/supervision to address gaps in existing macro-focused analyses. Also provides an international development perspective confirming that technical design quality and project management capacity (including supervision) are major constraints in Abuja's projects. The 41% figure for "poor quality of technical designs" directly implicates architectural detailing.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				on challenges resulted in economic losses of approximately $2.3 billion in foregone benefits across Nigeria.	
	Agusto & Co. (2024). 2024 infrastructure industry report. https://www.agustoresearch.com/report/2024-infrastructure-industry-report/	Grey literature (industry report)	Data aggregation from economic indicators, surveys, and case analyses.	Attributes failures to macro-factors like funding irregularities, inflation, corruption, and contractual disputes. Notes widespread inefficiencies in Nigerian infrastructure, with Abuja projects experiencing high overruns due to political interference and erratic funding.	Synthesizes industry-level causes, providing context for Abuja's failures and highlighting how these overshadow micro-technical issues, thus supporting the study's aim to bridge this gap through focused evidence on detailing/supervision.
	Oluyemi-Ayibiowu, B. D., Aiyewalehinmi, O. E., & Omolayo, O. J. (2019). Most critical factors responsible for cost overruns in Nigeria building construction industry. *J. Multidiscip. Eng. Sci. Stud*, *5*, 2500-2508.	Peer-reviewed journal article	Literature review and a questionnaire survey.	A total of twenty (20) cost overrun causative factors were obtained from literature. The questionnaire survey was distributed to randomly selected respondents from a combination of clients, consultants, contractors, site-engineers, project-managers and	Offers ranked causes applicable to Abuja, synthesizing evidence on quantitative failures and setting the stage for analyzing how detailing/supervision exacerbates these issues.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				subcontractors. In all, one hundred and forty one (141) questionnaires were distributed to randomly selected respondents (clients, consultants, contractors, site-engineers, project-managers and sub-contractors), one hundred and thirty two (132) questionnaires were returned out of which three (3) questionnaires were found incomplete and invalid. Only one hundred and twenty nine (129) questionnaires were found consistent and valid for use in this research. Relative importance index (RII) and severity index were used to carry out ranking and severity analysis. Based on the data received, six (6) most severe factors of	

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				construction cost overrun were identified as: risk and uncertainty related factors (89.5%); lack of financial power by clients (88.5%); weak regulation and control (88.2%); project fraud and corruption (82.6%); variation of prices (81.3%) and indiscriminate change in design/works (80.1%).	
	Iroha, E. V., Watanabe, T., & Satoshi, T. (2024). Flawed institutional structures: project managers underutilized in Nigeria's construction industry. *Buildings*, *14*(3), 807.	Peer-reviewed journal article	Literature review and semi-structured interviews	The collected data were coded into a four-level framework for institutional analysis. This method was employed to analyze the interrelationships between the identified embedded factors, institutional laws and regulations, and construction organizations, and to understand how their influence results in the underutilizati	Provides evidence on socio-political causes, relevant for synthesizing failures in Abuja's context and linking to weak supervision as an amplifier.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				on of project managers. Deviation analysis was conducted as an additional method to categorize the impacts of the embedded factors at each institutional level and to determine how these impacts contribute to the underutilization of project managers in the Nigerian construction industry (NCI). It was found that the system of the underutilization of project managers consists of two subsystems: underutilization and lowering commitment. For the former subsystem, corruption, political influence, religious and tribal discrimination, and organizational culture were found to adversely influence the institutional structure of the	

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				construction industry in Nigeria. These factors weaken the governance mechanisms within the industry, leading project managers to prioritize corrupt practices over project needs. The ineffectiveness of existing laws and regulations exacerbates the situation, supporting unfair working conditions and contributing to the underperformance of project managers. This result leads to development at the top of the latter subsystem, with minimal incentives and limited opportunities for career growth within construction organizations.	
	Olanrewaju, S. D., & Ogunmakinde, O. E. (2020). Waste minimisation strategies at the design phase: Architects' response. Waste Management, 118, 323-330.	Peer-Reviewed Journal	Quantitative survey of 215 registered architects in Nigeria	Study found that the top strategies for minimizing construction waste at design phase are "modular	Directly links the quality of architectural detailing to a key quantitative metric (material waste/cost). Shows

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			using structured questionnaires; data analyzed using mean scores, factor analysis, and regression modeling to identify most effective waste minimization strategies.	coordination, proper detailing and market survey" (mean scores: 4.51, 4.48, 4.42 respectively). A major cause of waste was "client's last minutes changes to design" (identified by 78% of respondents). The study estimated that proper detailing could reduce construction waste by 15-25% on typical building projects. Architects acknowledged that incomplete or unclear details force contractors to make assumptions, leading to material waste through errors and rework.	practitioners recognize proper detailing as primary tool for cost control. The finding on client changes highlights a key external pressure on the detailing process that supervision must manage.
Critically analyse the specific role and impact of architectural detailing and	Jimoh, R. A., Oyewobi, L. O., Adamu, A. N., & Bajere, P. A. (2017). Influence of supervision on labour productivity on construction sites in Abuja-Nigeria. *Independent Journal of Management & Production, 8*(1), 88–109.	Peer-reviewed journal article	Mixed methods; surveys and qualitative data from 20 construction sites in Abuja.	No statistically significant difference in labour productivity between professional and non-professional supervisors. Communicati	Directly analyzes supervisory practices in Abuja, highlighting their role in productivity and variance control, contributing to critical

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
supervisory practices as identified in these studies.				on barriers have a mean impact score of 4.29 on Likert scale. Well-defined inspection routines reduce cost/time variances, but external factors like political interference undermine efficacy. Supervision pillars: Technical competence, authority, communication.	examination of how weak supervision amplifies detailing issues in mega projects.
	Dalibi, S. G. (2016). Resultant effects of poor supervision in construction projects in Nigeria. *6th Building and Construction Economic Round Table, Abuja FCT, Nigeria*.	Peer-reviewed journal article	Quantitative surveys on public projects.	Well-defined inspection protocols reduce variances, but under-resourcing and political interference dilute authority. In Abuja, supervision bridges design and implementation, preventing deviations. A total 165 questionnaires were randomly administered; 112 responses were received, 12 were incomplete and deemed invalid while 53 were not	Examines supervisory effectiveness, providing evidence for its impact on project outcomes in Abuja's context, essential for analyzing interplay with detailing.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				returned. Civil Engineers with 42.31% have the highest responses followed by Building Engineers with 34.62% while Construction Managers have the least with 17.31%. Among the respondents, professionals with experience of 10years and below have 59.82% of the responses while those with above 10years of experience have 40.18% of the total response. The result shows that 10 of the resultant effects of poor supervision were strongly agreed by the respondents (representing 47.62%), 7 were agreed (representing 33.33%) while 4 remain undecided or Neutral (representing 19.05%). However, the result shows that each category of	

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				the respondents‟ years of experience perceives the resultant effects of poor supervision differently based on their ranking. The testing of the research hypotheses was carried out using Chi-square statistical test, and the Alternative hypothesis was accepted since the value of x2 Calculated is greater than the value of x2 Tabulated. The Alternative hypothesis stated that “there are resultant effects of poor supervision in building construction projects at the construction and the post occupancy stages”.	
	Olowolayemo, O. (2023). Factors Responsible for Deficient Supervision of Construction Project in the Nigerian Building Construction Industry.	Peer-reviewed journal article	Quantitative analysis; surveys quantifying determinants.	One hundred and twentythree questionnaires were administered to construction professional in the building	Quantifies supervision's role, supporting critical analysis of its impact on quantitative success in Abuja mega projects.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				industry out of which one hundred and fifteen were retrieved, coded, and analyzed using descriptive statistics; percentile and mean item score. The study concluded that the three major factors responsible for deficient supervision on construction works are; the presence of inexperienced supervisors (M=4.5826), a lack of effective planning (M=4.4870), and poor communication (M=4.4522).	
	OLAROTIMI, A. E. (2022). *EVALUATION OF CRITICAL SUCCESS FACTORS FOR PUBLIC-PRIVATE PARTNERSHIP'S REMODELLED MARKET PROJECTS IN ABUJA, NIGERIA* (Doctoral dissertation).	Peer-reviewed journal article	Quantitative analysis; 120 surveys.	The critical success factors observed in this study were factors at the preliminary qualification evaluation phase, the tendering phase, the construction phase, operation phase and transfer phase. The analysis of variance of	Provides tailored insights rating critical success.

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				these factors to the level of usage of PPP model shows a significant impact of 89.5%. Design Build and Operate, Design Build Operate and Transfer, Operation and Maintenance, Build-Operate and Transfer, Design Build, Design Build Operate and Maintain are some of the PPP models used for markets remodeling. Price risks, completion delays, operating cost, expropriation, review of tariff and change in interest rates were reported with higher figures implying higher significance. In terms of risk associated with remodeling of markets using PPP arrangement by the actors. for public sector, 80% of respondents	

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				affirmed that project risk is highly related, regulatory risk 55% highly related, financial risk 79% moderately related, political risk 43% highly related, market risk 56% of respondents agree it's not related and development and planning risk 47% not related. But for private sector, respondents viewed market risk is 15% highly related, development planning risks with 84% moderately related, project risk with 26% not related, political risk with 77% moderately related, regulatory risk 84% moderately related and financial risks 64% highly related according to respondents. Overall, in this study, the results revealed risk	

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				factors and significant success factors on remodeling of markets in FUT Abuja Nigeria	
	Revizto. (2025). Understanding the architectural design phases and stages of the process. https://revizto.com/resources/blog/architectural-design-phases-stages	Industry blog/grey literature	Conceptual review.	Detailing improves constructability and buildability; uses BIM for coordination. Challenges in developing economies: Compressed timelines, low fees.	Highlights detailing's functional role, relevant for analyzing its impact in Abuja's high-stakes environment.
	Pham, V. B., Wong, S. P. P., & Abbasnejad, B. (2025). A systematic review of criteria influencing the integration of BIM and immersive technology in building projects.	Peer-reviewed journal article	Systematic review.	Emphasis on BIM for clash detection in detailing; tensions with sustainability sequencing.	Supports analysis of detailing practices, showing technological impacts applicable to Abuja.
Identify the documented consequences of poor detailing and weak supervision (e.g., rework, variations, disputes).	Love, P. E. D., Smith, J., Ackermann, F., & Irani, Z. (2019). Making sense of rework and its unintended consequence in projects: The emergence of uncomfortable knowledge. *International Journal of Project Management, 37*(3), 501–516.	Peer-reviewed journal article	Systems dynamics modeling.	Rework represents 10-20% of costs; poor detailing triggers cycles of errors, clarifications, corrections. Weak supervision amplifies issues, leading to 10-30% cost increases.	Identifies consequences like rework and cost escalations, linking to Rework Cycle Model for Abuja's context.
	Yap, J. B. H., Shavarebi, K., & Skitmore, M. (2021). Capturing and reusing knowledge: Analysing the what, how and why for construction planning and control. *Production Planning & Control, 32*(11), 875–888.	Peer-reviewed journal article	Exploratory sequential mixed method research approach: 12 semi-structured	>50% variation orders from design issues; rework costs 50% from documentation errors. The findings reveal that	Documents global consequences applicable to Abuja, such as variations and disputes from poor detailing.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
			interviews were conducted with experts and local practitioners to gain an in-depth insight into CLS and reusable project knowledge (RPK) pertinent to construction projects. questionnaire survey responses from 338 construction practitioners in Malaysia were analysed.	construction time and cost control make a significant positive impact when past project experiences enhance expert judgements and stimulate knowledge reuse on future projects. Thus, the effective and efficient management of project knowledge should be optimised and considered of strategic value, giving rise to improved competency and sustainability within the construction industry.	
	Ogbemudia, C. E., Ndububa, E. E., & Mbaezue, N. D. (2021). An investigation into causes of building collapse in Abuja, Nigeria. *Global Scientific Journals*, *9*(2).	Grey literature (journal article)	Mixed Methods; Surveys on 47 collapse cases (2000-2010).	Consequences: >300 deaths; substandard materials (53.09%), poor workmanship (17.28%), deviations from plans leading to structural failures. The research showed statistically that the use of Sub-standard materials	Highlights severe consequences like collapses and fatalities from weak supervision/detailing, directly relevant for identifying risks in Abuja mega projects.

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Research Objective	Source/Reference (APA)	Type of Source	Methodology used for Data Collection	Summary of Evidence/Data (Very Detailed)	Significance/Relevance to Study
				(53.09%) and poor workmanship (17.28%) are the major causes of building collapse, however there are other causes such as bad design, deviation from approved plan etc. The research also showed that Developers (82.1%) play a huge role in the cause of building collapse. Government (84.8%) currently shoulder the major responsibility of ensuring that building collapse is eradicated. The response from the administered questionnaire showed that Professionals ensure proper site supervision (74.1%), public enlightenment (14.8%), and regulation of building codes (11.1%) as means to reduce the	

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				occurrence of building collapse. Amongst other recommendations, Government should enact a Law that will aim to curbing the use of sub-standard materials and making sure that high quality material prices are subsidised so that all income level can afford it. Hence, if all these recommendations can be taken seriously, it would provide a lasting situation to the menace of collapsed building and the psychological traumas it causes on its victims	
	Bello, S. M. (2025). Promises and Realities of Smart City Projects in Africa: The Abuja Centenary Economic City (ACEC) in Nigeria [Master's thesis, Ohio University].	Thesis/ grey literature	qualitative approach, drawing from in-depth interviews with residents, policymakers, and project developer	Stalled project: Delays, land disputes, socio-spatial inequalities from poor planning/supervision. Findings reveal that while the ACEC	Identifies consequences like abandonment and lost investment, linking to supervision lapses.

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			s, as well as field observations.	project is marketed as a cutting-edge, sustainable urban development that would bring economic and environmental benefits, as well as foreign investment and international recognition, to Nigeria's capital city of Abuja, it has exacerbated socio-spatial inequalities, led to land dispossession, and prioritized elite-driven economic interests over inclusive growth. Residents were not immediately evicted from the project sites, but they are facing uncertainty that could extend to long-term issues, with land use restrictions further exacerbating indirect displacement. This displacement tactic, which keeps inhabitants in limbo,	

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				undoubtedly calls into question the binary notion that smart city projects either immediately displace or integrate. By interrogating the contradictions between policy rhetoric and on-the-ground realities, this research highlights the limitations of top-down, investor-led smart city models, in large cities across the global south. It advocates for a more inclusive and context-sensitive approach to urban development, one that integrates the voices of affected communities, ensures equitable access to urban benefits, and moves beyond the utopian allure of technology-driven progress.	

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APPENDIX 2: SUMMARY TABLE OF CASE STUDIES

Project	Project Details (start, completion, contractors, etc.)	Key Issues Identified	Direct Link to Detailing/Supervision	Consequences	Sources/Full Reference (APA)	Notes
Abuja Centenary Economic City (ACEC)	Started: 2014; Planned completion: Not specified (ongoing limbo); Contractors: Private developers (e.g., Centenary City PLC); Scale: 1,262 hectares, $18.5 billion investment, mixed-use smart city (Phase I: 4.9 million sqm, Phase II: 3.263 million sqm); Location: Southwest Abuja; Funding: $120 million initial, $15.6 billion	Funding shortages, land disputes, governance issues, socio-spatial inequalities, elite-driven interests, indirect resident displacement, Senate probe on 11-year delays, underhand dealings.	Poor coordination in planning/detailing leading to ambiguities in land use and infrastructure sequencing; weak supervisory control allowing deviations and political interference.	Project stalled (no high-rises started), economic losses ($18.5 B renovation plan unfulfilled), public uncertainty, capital flight, diminished trust.	Bello, S. M. (2025). Promises and Realities of Smart City Projects in Africa: The Abuja Centenary Economic City (ACEC) in Nigeria [Master's thesis, Ohio University]. https://etd.ohiolink.edu/acprod/odb_etd/ws/send_file/send?accession=ohiou1755184149610511&disposition=inline; The Guardian Nigeria. (2024, May 8). Senate probes $18.5b Abuja centenary city project. https://guardian.ng/news/senate-probes-18-5b-abuja-centenary-city-project	The Senate has resolved to investigate the stalled $18.5 billion Abuja Centenary Economic City project. Adopting a motion sponsored by Yisa Ashiru Oyelola (APC: Kwara State), the upper legislative chamber agreed to set up an ad hoc committee to "urgently investigate the factors impeding the completion of the Abuja Centena

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	secured interest.					ry City project." The original vision for the project was for it to serve as a potential economic hub, with a plan to create over 190,000 construction jobs, 250 million permanent well-paying employments and accommodation for over 200,000 residents. The centenary city was designated as a free trade zone under the regulatory oversight of the Nigerian Export Processing Zones Authority (NEPZA),

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						without prejudice to other statutory agencies like the Federal Capital Territory Administration (FCTA), Abuja Investment Company (AIC) and Abuja Infrastructure Investment Centre (AIIC).
Nnamdi Azikiwe International Airport Terminal	Started: Not specified (pre-2017); Completion: Delayed (post-2017); Contractors: Not detailed; Scale: Transport hub expansion.	Coordination failures between architectural/engineering disciplines, design changes, legal claims, crises/controversies.	Inadequate architectural detailing causing discrepancies and ambiguities; absent supervision leading to non-adherence to drawings.	Costly post-contract variations, extended timelines, hidden costs, legal disputes.	Nigeria Real Estate Hub. (2018). Nnamdi Azikiwe International Airport new terminal: The hidden cost of design changes. https://nigerianrealestatehub.com/abuja-airport-terminal-cost/; Premium Times. (2017, November 14). Inside the crisis, controversies of Abuja airport terminal project. https://www.premiumtimesng.com/news/headlines/250970-inside-crisis-controversies-abuja-airport-terminal-project.html	
Abuja Second Runway Project	Construction Period: Approx. 2013-2017 Contractor: CCECC (China Civil Engineering	Terminal completed at 83% but with fundamental design anomalies requiring $400-	Weak supervision allowing substandard work progression; detailing issues in	Significant cost overruns, project delays, infrastructure vulner	Radio Nigeria. (2025, January 26). Abuja second runway project faces delays amid cost overruns. https://radionigeria.gov.ng/2025/01/26/abuja-second-runway-project-faces-delays-amid-cost-overruns	The construction of a second runway at Nnamdi Azikiwe International Airport, Abuja, has been

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	Construction Corporation) Funding: $500 million loan from Chinese government Completion Status: 83% complete (as of Jan 2018) Client: Federal Airports Authority of Nigeria (FAAN) Minister at Time: Hadi Sirika (Aviation) Scope: New international terminal building	500 million to correct Minister Hadi Sirika publicly admitted design flaws during January 2018 inspection tour Design anomalies documented: - Terminal badly located, violating Abuja airport master plan - Blocks the control tower (safety issue) - Obstructs fire tender access - Water and sewage issues - Power issues - Small apron space - Doesn't link to existing terminals seamlessly	planning contributing to variances.	abilities.		stalled following a significant cost escalation, increasing the initial budget of ₦90 billion to an alarming ₦532 billion. The development was revealed by the Minister of Aviation and Aerospace Development, Festus Keyamo, during the ministry's 2025 budget defense at the National Assembly. The runway project, initially proposed to address growing air traffic congestion, has been mired in delays and controversies since its

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		Coordination failures between architectural and engineering disciplines Contractor admitted: "If we get the funding, the entire project should be ready in one year" - implying funding for corrections needed				conception. Originally approved with a ₦64 billion budget in 2009, it was canceled in 2010 amid corruption allegations. Despite subsequent budgetary allocations - including ₦10 billion in 2017, ₦8 billion in 2018, ₦13 billion in 2019, and ₦14 billion in 2021, the project has struggled to gain traction. Under the administration of former President Muhammadu Buhari, the contract was awarded to China Civil Enginee

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						ring Construction Corporation Nigeria Limited (CCECC) at a revised cost of ₦67 billion. However, the project has faced further setbacks, with Minister Keyamo disclosing that the contractor abandoned the site after receiving ₦30 billion of the ₦90 billion allocated. CCECC cited an "unacceptable contract variation" as the reason for its withdrawal, requesting a cost adjustment that the minister has deemed excessive.

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African Medical Centre of Excellence (AMCE)	Started: Planning phase (2023); Completion: Not specified; Contractors: Not detailed; Scale: $300 million health infrastructure; Funding: AfDB/ Afreximbank.	No major failures reported yet; focuses on master planning.	Potential for detailing/supervision to prevent future issues; emphasis on BIM coordination.	None documented (preventive example); aims to avoid overruns through robust practices.	YouTube. (2023, June 29). This $300 million dollar Infrastructure project will be a game changer... https://www.youtube.com/watch?v=BJyPu8PcATQ	African Export Import Bank is financing a $300 Million Medical Centre of Excellence Project in Abuja, Nigeria. Dar has successfully delivered the master plan and design for the African Medical Centre of Excellence (AMCE) in Abuja, Nigeria. This cutting-edge hospital is poised to transform healthcare in Nigeria and across Africa. AMCE will be a 500-bed secondary and tertiary healthcare institution

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						offering a wide range of specialized services. Initially, the project will begin with a 170-bed specialist hospital and gradually expand to a comprehensive 500-bed facility, incorporating additional components such as a pharmaceuticals section, retail outlets, academic and research centers, and hospitality and residential units. Operating in partnership with King's College Hospital, London, AMCE will provide a compreh

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						ensive spectrum of care services, including oncology, cardiology, haematology, and general healthcare. The facility will offer a full range of medical services, encompassing diagnostics, treatment, nuclear medicine, surgery, and post-surgical care. Dar's design approach places paramount importance on patient and staff safety and comfort. The master plan was meticulously developed, considering in-

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						depth studies on vehicular and pedestrian movement, resulting in an efficient and people-centered hospital layout. Future-proofing the facility, the design accounts for anticipated technological advancements in healthcare diagnostics and treatment methods. Additionally, Dar's emphasis on green and sustainable design choices ensures the facility's readiness for future needs. The project site covers

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						an extensive area of 51,200 m2, accommodating all necessary facilities, MEP services, and ample parking spaces.
Building Collapses in Abuja (2000-2010 Aggregate)	Multiple sites (47 cases); Started/ Completion: Various; Contractors: Various developers; Scale: Residential/commercial buildings.	Substandard materials, poor workmanship, overloading, faulty construction, unsupervised demolition.	Deviations from detailed plans, lack of site supervision allowing quackery and non-compliance.	>300 deaths, injuries, structural failures, economic losses.	Ogbemudia, C. E., et al. (2021). An investigation into causes of building collapse in Abuja, Nigeria. *Global Scientific Journal*. https://www.globalscientificjournal.com/researchpaper/AN_INVESTIGATION_INTO_CAUSES_OF_BUILDING_COLLAPSE_IN_ABUJA_NIGERIA.pdf	The research showed statistically that the use of Sub-standard materials (53.09%) and poor workmanship (17.28%) are the major causes of building collapse, however there are other causes such as bad design, deviation from approved plan etc. The research also showed that Developers (82.1%) play a huge

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						role in the cause of building collapse. Government (84.8%) currently shoulder the major responsibility of ensuring that building collapse is eradicated. The response from the administered questionnaire showed that Professionals ensure proper site supervision (74.1%), public enlightenment (14.8%), and regulation of building codes (11.1%) as means to reduce the occurrence of building collapse. Amongst other

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						recommendations, Government should enact a Law that will aim to curbing the use of sub-standard materials and making sure that high quality material prices are subsidised so that all income level can afford it.
Building Collapses in Abuja and Lagos (1984-2023)	Multiple sites (Abuja: 9 cases); Started/Completion: Various; Contractors: Various; Scale: Urban buildings.	Lack of monitoring, quacks/unapproved plans, inadequate site investigation/material tests.	Poor detailing leading to weak foundations/design errors; weak supervision enabling substandard workmanship.	114 deaths in Abuja, structural vulnerabilities, abandonments, legal actions.	Ekponyoh, U. D., George, W. K., Etuk, E. R., Elijah, E. S., & Kabari, A. D.(2025). Building Collapse in Abuja and Lagos Between 1984 and 2023: Assessing Structural Vulnerabilities to Prevent Reoccurrence. https://www.researchgate.net/publication/398772621_Building_Collapse_in_Abuja_and_Lagos_Between_1984_and_2023_Assessing_Structural_Vulnerabilities_to_Prevent_Reoccurrence	The population of the study consisted of 417 Engineers comprising of 184 in Abuja and 233 in Lagos State chapter duly registered with the Nigerian Society of Engineers (NSE). The research employe

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						d purposive sampling technique to select 30 Civil Engineers from Abuja and Lagos State respectively. A 30-item questionnaire consisting of three sections and 5-point rating scale used for data collection was faced validated by three experts. Cronbach alpha statistics was used to determine the reliability coefficient of the instrument which yielded overall reliability index of 0.89 comprising of 0.91 and 0.87 for Section B and C

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						respectively indicating that the instrument was reliable. Frequency, Percentage, Mean and standard deviation were used to answer research questions while the hypotheses were tested with independence t-test at 0.05 level of significance. Findings revealed that Abuja has 9 cases of building collapse and 114 numbers of lives lost while Lagos has 108 cases of building collapse and 460 numbers of lives lost. This implies that Lagos

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						State has the highest numbers of building collapse and lives lost between 1984 and 2023. Further more, result of the study revealed that lack of monitoring, use of quacks and unapproved plan, inadequate site investigation and appropriate material tests among others were the causes of building collapse in Abuja and Lagos, Nigeria between 1984 and 2023. From the findings of the study, the research

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						ers recommended that adequate monitoring of building construction, use of professionals and approved plan, adequate site investigation and appropriate material tests, prosecution of offender(s) among others as strategies to effectively mitigate incessant building collapses in Abuja and Lagos State, Nigeria between 1984 and 2023.
Federal Road Construction Projects	Multiple projects; Started/Completion: Various (e.g.,	Man/money/machine-related delays, 55% with overruns.	Supervision lapses in oversight; detailing ambiguities in	Economic impacts, delays, reduced	Egila, A. E., Balogun, O. A., & Yusuf, S. O. (2020). Assessment of delay and cost-overrun in federal road construction project in Abuja. *Independent Journal of Management & Production*, *11*(4), 1184-1200.http://www.ijmp.jor.br/index.php/ijmp/article/view/1065/1383	The research instruments include in-depth literature review,

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in Abuja	2020 study); Contractors: Federal; Scale: Infrastructure.		plans leading to rework.	returns.		fieldwork, questionnaire administration, and interview. Inferential statistics such as Relative importance index (RII) and Mean Value techniques were used to analyze collected data. The result of the study identified factors influencing delays and cost overruns in road construction projects as; man related, money-related, machine-related, material related, environmental-related, and method related factors. Analysis using RII and MV

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						ranked man and money related as the highest factors for delay and cost overrun respectively.
National Library Headquarters, Abuja	Start: March 11, 2006 Original Completion: 22 months (2008) Current Status: 44.6% complete after 18 years Original Contract Sum: ₦8.59 billion (2006) Current Estimated Cost: >₦200 billion Contractor: Reynolds Construction Company (RCC) Client: Federal Ministry of Education / National Library of	18 years since award, only 44.6% completion Cost escalation from ₦8.59bn (2006) to over ₦200bn (projected) – 2,300%+ overrun Multiple contract revisions and extensions: 2010 revision to ₦17bn with 21-month extension 2021: Ministry projected ₦49.64bn; contractor estimated ₦120.33bn	Detailing: Original design scope expanded multiple times without proper documentation updates Missing critical documents: evidence of FEC approval for revised cost estimate; contractor undertaking to complete at approved cost No proper documentation of scope changes over 18 years Supervision:	Quantitative: 2,300%+ cost overrun (₦8.59bn → ₦200bn+) 18+ years delay vs. 22-month original timeline 44.6% completion after 18 years Billions in sunk costs with no functional asset Qualitative: International embarrassment: CEO of Nation	The Guardian Nigeria. (2024, May 23). *18-year-old construction work: From N9b in 2006, abandoned national library to cost over N200b*. https://guardian.ng/news/18-year-old-construction-work-from-n9b-in-2006-abandoned-national-library-to-cost-over-n200b/ Liman, D. (2025, September 5). *NLA urges FG to complete National Library project*. Daily Trust. https://dailytrust.com/nla-urges-fg-to-complete-national-library-project/ Moses, T. (2024, August 26). *18 years after: N49.6bn National Library project in a shambles*. Leadership. https://leadership.ng/18-years-after-n49-6bn-national-library-project-in-a-shambles/	Despite repeated government promises to complete the national library project, work has been stalled for over 18 years while the facility housing the current library continues to deteriorate. The library, located at Plot 35, Cadastral Business District in the Federal Capital Territory, Abuja, was initially awarded to Reynold

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	Nigeria Scope: 11-storey structure with two basements, ground floor, eight upper floors; facilities include bookstore, bindery, printing press, exhibition hall, auditorium, restaurants, clinic, crèches, cataloguing, reference areas, book stacks, administration, data processing centre	2024: Current administration may require ₦218.44bn (exchange rate: N1,534/$1) TETFund funds available but could not be released due to missing documentation Accusations of civil servants frustrating project due to lack of "kickbacks" Bureaucratic bottlenecks at multiple levels • Political interference across administrations	"Absent supervision" documented in project files Contractors not held accountable for missed timelines (22-month project now at 18 years) No enforcement of contract terms despite repeated failures Civil servants accused of deliberate obstruction for personal gain • TETFund Executive Secretary confirmed funds available but couldn't release due to missing documentation,a basic project manage	al Library stated at World Conference of Directors of National Libraries: "Nigeria is not standing tall as far as national monuments are concerned. Every member of the participating directors would be asking what is holding the project." Loss of educational/cultural assets for Nigerian citizens Reputational		s Construction Company in 2006 during the administration of former President Olusegun Obasanjo. The project, valued at N8.9 billion, was expected to be completed within four years. LEADERSHIP reports that today marks over 18 years since the library project was awarded, yet there are no visible signs of progress toward its completion. Despite the passing of nearly two decades,

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			ment/supervision failure	damage to Nigeria's project delivery capacity Wasted public funds that could have served multiple alternative projects		the project remains stalled, with no noticeable progress in sight. After failing to complete the project, the federal government re-awarded it in March 2010 with a 21-month timeline and at a cost of N49.6 billion. However, as of today, there has been no progress.

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APPENDIX 3: PRISMA FLOW TABLE

Phase	Step/Description	Number (n)	Notes/Exclusions/Reasons
Identification	Records identified through database searching (e.g., Google Scholar, Scopus, JSTOR, NIOB/NIA/COREN databases using keywords: "Abuja construction projects," "project failure Nigeria," "cost overrun Nigeria," "architectural supervision Nigeria," "building detailing Nigeria," "rework construction Nigeria"). Limited to 2000–2025.	453	Based on aggregated searches; conservative estimate from similar construction literature reviews
	Additional records identified through other sources (e.g., grey literature from Senate Committee, FCDA, Auditor-General; media from The Guardian, Premium Times; hand-searching references).	147	Includes institutional reports, theses, and news articles not in primary databases. Total identified: 600.
Screening	Records after duplicates removed	520	80 duplicates removed across databases and sources.
	Records screened (titles/abstracts reviewed for relevance to Nigerian construction failures, design/supervision).		All post-duplicate records screened.
	Records excluded.	400	Excluded for: irrelevance (e.g., non-construction sectors like oil/gas; n=247), opinion pieces/editorials without empirical data (n=99), pre-2000 publications (n=54).
Eligibility	Full-text articles assessed for eligibility (detailed review against criteria: focus on delays/overruns, design deficiencies, supervision inadequacies in Nigeria/Abuja).	120	Selected based on abstract relevance.
	Full-text articles excluded, with reasons.	93	Excluded for: exclusive focus on non-construction (n=29), lack of empirical backing (n=41), outside Nigeria/Abuja context (n=23).
Included	Studies included in qualitative synthesis (sources used in the review's analysis and appendices).	27	Matches unique sources from Appendices 1 and 2 (e.g., Saidu 2017, AfDB 2022, Jimoh 2017, Bello 2025, etc).