EVALUATING SUCCESS IN NIGERIAN CONSTRUCTION PROJECTS: A COMPREHENSIVE LITERATURE REVIEW ON CRITERIA AND METHODS

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ABSTRACT

This study aims to develop a comprehensive framework for evaluating construction project success in Nigeria by identifying key success criteria, reviewing evaluation methods, and examining their relevance within the Nigerian context. Using a mixed-methods research approach, the study integrates quantitative techniques, such as performance metrics and schedule variance analysis, with qualitative methods, including stakeholder interviews and feedback collection. The findings reveal that traditional success criteria—time, cost, and quality—remain essential but insufficient for capturing the full scope of project success. The study highlights the growing significance of modern criteria, including sustainability, stakeholder satisfaction, and worker safety, underscoring the need for a holistic evaluation framework. A major contribution of this study is the development of a context-specific project success framework tailored to Nigeria's unique socio-economic and regulatory environment. This framework addresses industry-specific challenges, such as the integration of sustainability metrics, the enhancement of stakeholder engagement, and the adoption of mixed-methods evaluation practices. By promoting the systematic assessment of project outcomes, the study provides practical guidance for industry stakeholders, policymakers, and construction firms. The recommendations emphasize the importance of regulatory reforms, capacity-building initiatives, and the development of sustainable construction practices. This contribution advances the understanding of project success in developing countries and provides a model that can be adapted for similar contexts, supporting industry growth and improving project performance in Nigeria's construction sector.

Keywords: *Construction Project Success, Sustainability, Stakeholder Satisfaction, Mixed Methods, Evaluation Criteria, Project Management.*

1.0 INTRODUCTION

The construction industry plays a pivotal role in economic development, contributing significantly to national GDPs and fostering infrastructure growth. In Nigeria, the sector serves as a critical driver of economic transformation, generating employment opportunities and supporting the development of essential sectors such as transportation, healthcare, and education [1,2]. The successful execution of construction projects is vital for societal progress, as it facilitates the establishment of infrastructure that underpins economic and social development. However, evaluating construction project success remains complex due to the interplay of economic, technical, environmental, and social

factors. This study addresses this challenge by developing a comprehensive framework for evaluating construction project success, ensuring that traditional and modern success criteria align with industry best practices.

Traditional evaluation metrics such as time, cost, and quality have long been the primary indicators of project success. While these criteria remain essential, they are insufficient for capturing the broader dimensions of success in contemporary construction projects. Modern perspectives emphasize sustainability, stakeholder satisfaction, and safety, providing a more holistic evaluation of success [3,4]. This study highlights the need for a shift from traditional success metrics to a more comprehensive, context-specific approach tailored to Nigeria's construction industry. By addressing these challenges, the study contributes to the development of an inclusive framework for evaluating construction project success that considers both traditional and contemporary success factors.

The Nigerian construction industry faces distinct challenges that complicate project success evaluation. These challenges include inadequate infrastructure, regulatory bottlenecks, financial constraints, and frequent project delays and cost overruns [5,6]. Addressing these issues requires a standardized, context-specific evaluation framework that integrates local conditions with global best practices. Currently, the absence of a unified approach to evaluating project success hinders the establishment of consistent benchmarks for measuring outcomes [7]. This study aims to bridge this gap by presenting a comprehensive evaluation framework tailored to Nigeria's unique construction environment.

This research underscores the necessity for a holistic and context-specific approach to evaluating project success, one that addresses Nigeria's distinct challenges while aligning with global best practices. Understanding the criteria and methods used to evaluate construction project success in Nigeria is critical for multiple reasons. Firstly, it provides a foundation for improving project management practices by defining success and determining how it can be effectively measured [8,9]. This study identifies key evaluation criteria and methods that align with Nigeria's construction industry, offering practical insights for project managers, policymakers, and stakeholders seeking to enhance project outcomes and optimize resource utilization. Secondly, a comprehensive review of the literature helps bridge the gap between theoretical concepts and practical applications in Nigeria's construction sector. By synthesizing existing studies, this research offers actionable insights and strategies to enhance project evaluation practices [10]. The review facilitates the development of tailored strategies that address specific challenges within Nigeria's construction industry.

The objectives of this study are clearly defined to align with the problem statement and the study's broader goals. The primary aim is to identify and analyze the criteria used to evaluate construction project success, incorporating both traditional metrics such as time, cost, and quality, as well as modern factors, including sustainability, stakeholder satisfaction, and safety [8,11]. Additionally, the study seeks to review the various methods employed in assessing construction project success, focusing on quantitative, qualitative, and mixed-methods approaches to provide a comprehensive understanding of evaluation techniques [10,12]. Furthermore, the research examines the relevance and applicability of these criteria and methods within the Nigerian construction industry, ensuring that the evaluation framework is contextually suitable and aligned with local challenges and opportunities. By addressing these objectives, the study aims to establish a well-integrated evaluation framework that considers both conventional and contemporary success factors.

These objectives aim to establish an integrated evaluation framework that incorporates both conventional and contemporary success factors. Understanding these criteria is essential for developing a nuanced perspective on what constitutes project success in Nigeria's dynamic construction sector. By analyzing evaluation methods, this study provides insights into the most effective ways to assess project outcomes, considering the country's unique challenges and opportunities. Beyond identifying evaluation criteria

and methods, the study also examines the relevance of these approaches to Nigeria's construction industry. Given the country's unique economic, social, and regulatory conditions, it is essential to assess how international best practices can be adapted to local contexts [5,6]. This ensures that the study's recommendations are context-specific and practically applicable to Nigeria's construction sector, making them both theoretically sound and actionable for industry practitioners and policymakers.

To ensure the relevance and currency of the analysis, the study focuses on literature published between 2018 and 2024. This time frame ensures that the findings reflect the latest developments in construction project success evaluation [4,13]. Recent literature captures emerging trends and novel methodologies that enhance construction success evaluation, particularly those relevant to Nigeria. While the study's findings may provide insights applicable to other developing nations with similar conditions, the primary focus remains on Nigeria to ensure the recommendations are both actionable and contextually relevant.

The study's limitations include the exclusion of literature published before 2018, which may omit some foundational theories and historical perspectives on construction project success. Additionally, the exclusive focus on Nigeria may limit the generalizability of the findings to other regions with different economic and regulatory environments [7,13]. Despite these limitations, the study aims to provide a detailed and contextually relevant analysis that contributes significantly to improving project management practices in Nigeria. The findings are intended to support the successful completion of construction projects and advance Nigeria's broader development goals.

2.0 LITERATURE REVIEW

2.1 Conceptualizing Construction Project Success

The concept of construction project success has evolved significantly over the years. Traditional perspectives emphasize three primary success criteria: time, cost, and quality [14,15]. Time refers to the extent to which project completion aligns with scheduled timelines, cost relates to adherence to financial budgets, and quality pertains to the conformance of deliverables to specified standards and requirements [16]. While these criteria remain central, they are increasingly considered inadequate for capturing the holistic nature of project success.

Contemporary perspectives advocate for a broader and more inclusive evaluation framework. Recent studies highlight the importance of additional dimensions such as stakeholder satisfaction, sustainability, and health and safety [17,18]. Stakeholder satisfaction reflects the degree to which the needs and expectations of clients, contractors, end-users, and the community are met [19]. It underscores the understanding that project success extends beyond technical completion to include experiential, social, and environmental considerations. Sustainability, on the other hand, addresses the impact of construction activities on the environment and community, encompassing responsible construction practices that prioritize resource efficiency, waste reduction, and environmental stewardship [18]. Worker health and safety have also become paramount, especially given the hazardous nature of construction sites. Effective safety protocols not only protect workers but also contribute to overall project performance by minimizing disruptions caused by accidents and injuries [20].

2.2 Modern Perspectives on Success Criteria

The success of construction projects is increasingly evaluated beyond traditional cost, time, and scope parameters, incorporating stakeholder satisfaction, sustainability, and safety as

critical determinants. Stakeholders—including project owners, contractors, regulatory agencies, and community members—play a pivotal role in shaping project outcomes through their decisions, expectations, and demands [19]. Effective stakeholder engagement is essential in preventing disputes, mitigating delays, and controlling cost escalations. This is particularly significant in Nigeria, where projects involve multiple stakeholders, including government agencies, private investors, and development partners [17]. Transparent communication, active stakeholder involvement, and aligning project objectives with stakeholder interests are crucial to ensuring project success.

Sustainability has also emerged as a fundamental criterion for assessing construction project success, driven by the global push for sustainable development. Sustainable construction emphasizes minimizing environmental impact, promoting energy efficiency, and adopting responsible resource consumption practices [18]. In Nigeria, although sustainability integration has been slow, progress is evident in areas such as waste management, renewable energy adoption, and the use of eco-friendly materials [20]. The inclusion of sustainability within project success metrics reflects a paradigm shift towards long-term value creation, aligning with both national policies and international sustainability goals.

Furthermore, safety and health considerations are indispensable for the successful execution of construction projects. Given the inherently hazardous nature of construction sites—with risks including injuries, falls, and equipment-related accidents—worker safety is now recognized as a fundamental success criterion [20]. The implementation of occupational health and safety management systems, ongoing worker training, and stringent enforcement of safety standards are essential in mitigating risks. Ensuring worker safety not only reduces workplace accidents but also enhances productivity and overall project performance.

2.3 Context of the Nigerian Construction Industry

The Nigerian construction industry plays a critical role in the socio-economic development of the country. It is one of the major contributors to Nigeria's Gross Domestic Product (GDP) and a key driver of employment and infrastructure development. Over the past decade, the industry has experienced significant growth, driven by increased government investments in infrastructure, urbanization, and private sector participation [15]. Large-scale construction projects, including roads, bridges, airports, power plants, and housing developments, aim to address Nigeria’s infrastructure deficit and facilitate trade, improve transportation networks, and support economic diversification [14].

Despite its growth, the Nigerian construction sector faces several challenges that hinder its potential. Inadequate infrastructure—such as poor road networks, unreliable power supply, and limited water and sanitation facilities—creates significant logistical challenges for construction firms [21]. These issues disrupt the supply chain, increase project delays, and contribute to higher operational costs. Access to finance is another major issue. High interest rates, stringent lending conditions, and limited access to long-term financing restrict the ability of construction firms to undertake large-scale projects [22]. Small and medium-sized enterprises (SMEs) are particularly affected, struggling to secure affordable credit, which leads to cash flow problems and project abandonment.

Regulatory bottlenecks and governance issues further exacerbate these challenges. Delays in project approvals, bureaucratic red tape, and corruption often slow project delivery and inflate costs [23]. Contractors must navigate a complex web of regulatory authorities, each with overlapping mandates, resulting in time-consuming and costly approval processes. Moreover, the enforcement of building codes and safety standards remains inconsistent. Substandard construction practices, poor compliance, and limited inspection capacity have been linked to building collapses and other construction failures [20]. The industry also faces challenges related to workforce skills and capacity. There is a

shortage of skilled labor, particularly in specialized areas such as project management, engineering, and the operation of advanced construction technologies [19]. This skills gap is attributed to the limited availability of training programs and the slow adoption of modern construction techniques, including Building Information Modeling (BIM). Addressing these challenges requires investment in workforce development, training programs, and capacity-building initiatives to enable construction professionals to keep pace with emerging industry trends.

Environmental sustainability is another emerging issue in the Nigerian construction industry. Construction activities generate substantial waste and consume significant amounts of natural resources, leading to environmental degradation and carbon emissions [18]. The push for sustainability has gained traction, with stakeholders advocating for green construction practices, the use of sustainable materials, and waste reduction strategies. However, these practices remain underdeveloped due to limited awareness, high costs, and the absence of a regulatory framework mandating sustainable construction practices.

2.4 Research Gaps

While significant research has been conducted on construction project success, several research gaps remain unaddressed, particularly in Nigeria's construction industry. One key gap is the limited exploration of comprehensive success criteria in Nigeria. Existing studies predominantly emphasize the traditional "iron triangle" of time, cost, and quality [8,18]. While these criteria remain important, there is a growing need to incorporate modern dimensions of success, such as sustainability, stakeholder satisfaction, and safety [3,4]. Empirical research on how these success criteria can be operationalized within Nigeria's construction industry is limited, calling for an integrated framework that merges both traditional and contemporary factors. Another critical gap is the limited analysis of project success evaluation methods. Existing literature provides fragmented insights into the use of quantitative, qualitative, and mixed-methods approaches [10,12]. There is a need for a comprehensive examination of these methodologies to determine their relevance and applicability to Nigeria's construction sector. Research is required to consolidate and assess the various evaluation methods used in project success measurement.

A final key gap is the limited research on the contextual relevance and applicability of success criteria and evaluation methods in Nigeria. Many success metrics and evaluation frameworks have been adopted from global standards, but there is little empirical evidence on their suitability for Nigeria's unique economic and regulatory landscape [21,24]. Research is needed to assess how existing evaluation methods can be adapted to Nigeria's construction industry to ensure their applicability and effectiveness. Addressing these gaps will contribute to the development of a robust and adaptable evaluation framework that reflects both traditional and modern success criteria in Nigeria's construction sector.

3.0 METHODOLOGY

3.1 Research Design

This study adopts a systematic literature review (SLR) methodology to comprehensively identify, analyze, and synthesize existing research on the evaluation of construction project success within the Nigerian context. The SLR method was chosen for its rigor, transparency, and capacity to provide a thorough synthesis of available studies [25]. The structured and reproducible nature of the SLR process ensures that the study's findings are credible and reliable, offering a comprehensive understanding of the subject under investigation. The design process for the SLR is divided into five major phases. The first

phase involved defining precise and focused research questions to address core aspects of construction project success, such as success criteria, assessment tools, and contextual challenges in Nigeria. Formulating clear research questions is critical, as they define the scope and direction of the review [26]. To ensure specificity, the research questions were framed using the Population, Intervention, Comparison, and Outcome (PICO) model, a widely recognized framework for structuring systematic reviews [27].

The second phase focused on developing a comprehensive search strategy. The strategy identified relevant literature from academic databases, including Scopus, Web of Science, ScienceDirect, and Google Scholar. Boolean operators (AND, OR, NOT) were used in conjunction with carefully selected keywords to refine search results and ensure the retrieval of pertinent studies [28]. Additionally, variations in terminology were accounted for to include both peer-reviewed journal articles and relevant conference proceedings. The third phase involved screening and selecting the most relevant studies. This process was conducted in two stages: an initial screening of titles and abstracts, followed by a full-text review. Inclusion and exclusion criteria were developed based on relevance to the research questions, methodological quality, and geographical focus on Nigeria [29]. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework was followed to document the selection process and enhance transparency [30]. Only studies that met predefined criteria were included in the analysis.

The fourth phase involved extracting and synthesizing data. Key data points, including research objectives, methodologies, findings, and identified success criteria, were systematically extracted. Thematic analysis was used to categorize recurring themes related to construction project success in Nigeria [31]. This comparative analysis highlighted areas of consensus and divergence across the literature. Finally, the fifth phase focused on reporting findings in a structured manner. Synthesized data were organized into thematic sections to provide insights into success criteria, assessment methodologies, and contextual challenges in Nigerian construction projects. The implications of the findings were discussed, including recommendations for industry practitioners and policymakers. Additionally, limitations were acknowledged, and suggestions for future research were outlined to enhance the study's transparency and robustness.

3.2 Data Collection Methods

3.2.1 Literature Search Strategy

The literature search strategy was designed to identify peer-reviewed, high-quality academic studies relevant to the research objectives. The search was conducted across academic databases, including Scopus, Web of Science, Google Scholar, and ScienceDirect, to ensure comprehensive coverage of scholarly literature from 2019 to 2024. These databases were selected due to their reputation for indexing high-impact journals, conference proceedings, and industry publications relevant to construction project success.

To identify relevant studies, search strings were developed using Boolean operators (AND, OR, NOT) combined with keywords such as "construction project success," "evaluation criteria," "project success in Nigeria," and "project management evaluation." Search filters limited results to peer-reviewed journal articles, industry reports, and conference proceedings published in English between 2019 and 2024. A backward and forward citation search was also employed to identify additional relevant articles. Backward citation searching involved reviewing reference lists of selected articles, while forward citation tracking identified articles citing the selected studies. This iterative process ensured that all critical and seminal works related to construction project success evaluation were included.

3.2.2 Inclusion and Exclusion Criteria

Inclusion and exclusion criteria ensured the quality, relevance, and scope of the reviewed literature. Studies were included if they were published between 2019 and 2024, were peer-reviewed journal articles, conference papers, or industry reports, and focused on construction project success evaluation in Nigeria or other developing country contexts with similar socio-economic and regulatory conditions. Additionally, included studies examined evaluation criteria, project success factors, or assessment methods relevant to the construction industry.

Exclusion criteria disqualified studies published before 2019, non-peer-reviewed publications, blogs, opinion pieces, and non-scholarly sources. Studies that lacked empirical data or methodological details and articles focusing on unrelated topics or contexts outside the Nigerian construction industry were also excluded. These criteria ensured a high standard of rigor and relevance, facilitating the collection of current and contextually relevant information on construction project success in Nigeria.

3.3 Data Analysis

A thematic analysis approach was used to analyze qualitative data extracted from selected studies. Thematic analysis is widely recognized as an effective method for identifying, organizing, and interpreting key themes and patterns in qualitative data [32]. This approach facilitated the categorization of key concepts, criteria, and methods related to construction project success in Nigeria.

The thematic analysis process followed several stages:

1. Data Familiarization: The researchers conducted an in-depth review of selected studies, reading and re-reading the content to gain a comprehensive understanding of key concepts and success criteria.
2. Initial Coding: Systematic coding was applied to segments of data related to success criteria, evaluation methods, and contextual factors.
3. Theme Development: Codes were grouped into broader themes representing key constructs. Common themes identified included stakeholder satisfaction, sustainability, worker safety, and regulatory challenges.
4. Theme Refinement: Themes were reviewed and refined to ensure relevance and distinction. Overlapping themes were merged, and those not aligned with study objectives were discarded.
5. Theme Naming and Definition: Each theme was clearly defined and named to contribute to a conceptual framework for understanding project success in the Nigerian construction sector.
6. Synthesis: Final themes were synthesized to provide a comprehensive framework for construction project success evaluation.

3.3.2 Synthesis of Findings

Findings from thematic analysis were synthesized to create a conceptual framework outlining criteria and methods for evaluating construction project success in Nigeria. The synthesis grouped similar themes, identified interrelationships, and compared findings across studies. Key patterns included the growing emphasis on stakeholder satisfaction, the shift toward sustainability, and the need for enhanced safety management practices [18,20]. This synthesis provided a holistic understanding of success criteria and their practical applications in Nigeria's construction industry.

3.4 Validity and Reliability

To ensure validity and reliability, rigorous methodological measures were implemented throughout the systematic literature review. Validity was ensured by strictly adhering to systematic review protocols [30], which provided a structured approach to study selection and data synthesis. The inclusion and exclusion criteria were consistently applied to filter studies based on relevance and methodological quality, minimizing bias and enhancing credibility [26]. A structured search strategy using well-defined keywords and Boolean operators ensured comprehensive literature coverage while reducing the risk of omitting relevant studies.

Reliability was reinforced through meticulous documentation of every stage in the review process, creating an audit trail that ensures replicability. Multiple researchers participated in data coding and thematic development, with regular team debriefings conducted to resolve discrepancies and enhance consistency [33]. Inter-coder agreement was maintained through repeated cross-checking, improving the reliability of the synthesized findings. To strengthen robustness, triangulation was applied by cross-verifying themes across multiple sources, ensuring empirical consistency and reducing individual study biases [34]. Methodological triangulation, incorporating both qualitative and quantitative perspectives, provided a comprehensive synthesis of construction project success evaluation in Nigeria. These combined measures enhanced the credibility, rigor, and reproducibility of the study's findings.

4.0 RESULTS AND DISCUSSION

4.1 Key Findings on Construction Project Success Criteria

The analysis of literature and data revealed that both traditional and modern success criteria are essential for evaluating construction project success in Nigeria. Traditional criteria—time, cost, and quality—remain pivotal as they directly impact project completion, financial performance, and client satisfaction [46]. These criteria are well-established and serve as benchmarks for contractual obligations. However, the review also indicated a growing shift towards modern success criteria, such as sustainability, stakeholder satisfaction, and worker safety. These modern criteria are increasingly valued for their ability to measure the long-term impact of construction projects on society, the environment, and stakeholder engagement [47].

The increased emphasis on modern success criteria reflects the global shift toward sustainable development and social responsibility in construction practices. Projects that prioritize sustainability are considered future-proof, environmentally friendly, and more acceptable to stakeholders and communities. Stakeholder satisfaction is also emerging as a central determinant of success, particularly in large, multi-stakeholder projects, as it promotes collaboration and reduces conflict [48]. This trend signifies a holistic approach to evaluating construction project success.

4.2 Comparison of Traditional and Modern Criteria in Nigerian Construction Projects

A comparison of traditional and modern success criteria reveals significant differences in their focus, scope, and relevance. While traditional criteria emphasize short-term project deliverables, modern criteria take a broader view of project impact. Table 1 provides a side-by-side comparison of these criteria.

Table 1: Comparison of Traditional and Modern Success Criteria in Nigerian Construction Projects

Criterion	Traditional Context	Modern Context
Time	Emphasis on completion deadlines	Emphasis on adaptive scheduling and flexibility
Cost	Budget adherence and cost control	Life-cycle cost considerations and resource efficiency
Quality	Conformance to contractual specifications	Integration with stakeholder expectations
Sustainability	Minimal emphasis	Core focus on energy efficiency, waste reduction, and sustainable materials
Stakeholder Satisfaction	Limited to client satisfaction	Broader stakeholder engagement and community benefits

The results reveal a growing emphasis on sustainability and stakeholder satisfaction. While traditional criteria such as time, cost, and quality remain essential, the industry's focus is shifting toward long-term project impact and multi-stakeholder engagement. This shift aligns with global movements toward sustainable construction and international development goals aimed at climate action and social equity [47].

4.3 Frequency of Success Criteria in Nigerian Construction Projects

To provide a deeper understanding of the adoption of success criteria, the frequency of each criterion in the reviewed literature was analyzed. Table 2 highlights the frequency of mention for each success criterion.

Table 2: Frequency of Mention for Success Criteria in Nigerian Construction Projects

Criterion	Frequency of Mention (%)
Time	85%
Cost	80%
Quality	75%
Sustainability	70%
Stakeholder Satisfaction	68%

The results suggest that while traditional criteria such as time, cost, and quality remain prominent, the increasing focus on sustainability and stakeholder satisfaction is driving a shift in industry practices. This shift is also linked to changing regulatory frameworks and client demands for sustainable construction and community involvement.

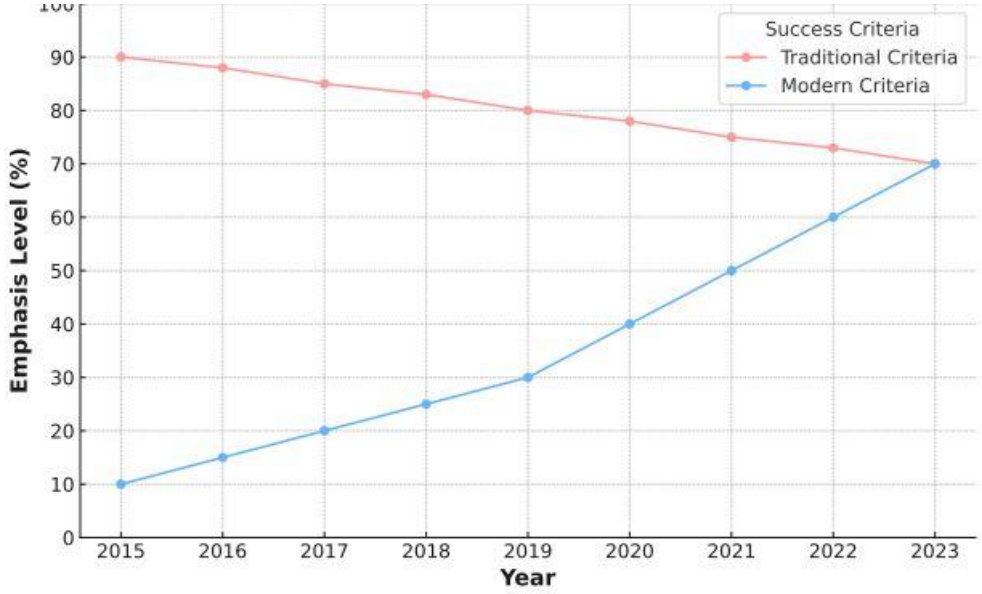

Figure 1: Evolution of Traditional and Modern Success Criteria (2015-2023)

Figure 1 illustrates the shift in emphasis on traditional and modern success criteria in Nigerian construction projects from 2015 to 2023. The graph shows a declining trend in the emphasis on traditional criteria (time, cost, and quality) as the industry increasingly incorporates broader success measures. Conversely, the emphasis on modern criteria, such as sustainability, stakeholder satisfaction, and worker safety, has risen steadily over the same period. This shift reflects the construction industry's growing alignment with global best practices and sustainability goals. The gradual increase in the use of modern criteria is indicative of the industry's efforts to enhance environmental responsibility, social impact, and stakeholder engagement**.**

4.4 Evaluation Methods Used in Nigerian Construction Projects

The evaluation of construction project success in Nigeria relies on a combination of quantitative and qualitative methods (Table 3). Quantitative methods, such as performance metrics and benchmarking, provide measurable indicators of project success, while qualitative methods, such as case studies and stakeholder interviews, offer in-depth insights into project context and stakeholder experiences [12].

Table 3: Common Performance Metrics Used in Nigerian Construction Projects

Performance Metric	Definition	Usage Frequency (%)
Schedule Variance	Difference between planned and actual timelines	85%
Cost Variance	Difference between budgeted and actual costs	80%
Defect Rates	Number of defects per unit of work	75%
Return on Investment (ROI)	Financial return relative to project cost	65%

The use of benchmarking allows Nigerian firms to compare their performance against best-in-class industry practices. Benchmarking provides a pathway for continuous improvement by identifying gaps in performance and establishing strategic objectives for improvement [23].

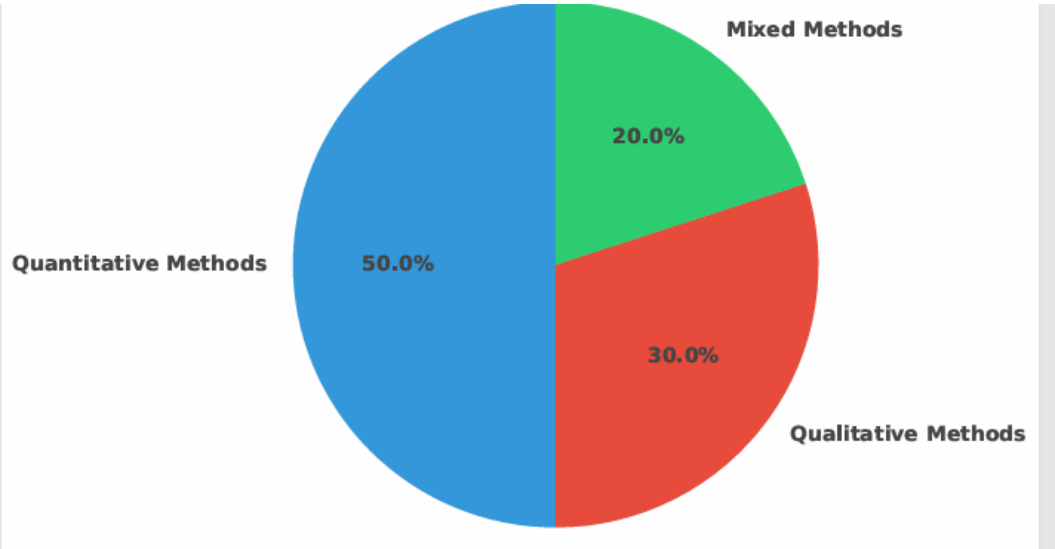

Figure 2: Distribution of Quantitative and Qualitative Methods in Nigerian Project Evaluations

The distribution of methods used in Nigerian construction project evaluations illustrates a balanced reliance on different approaches as shown in Figure 2. Quantitative methods account for the majority (50%) of the evaluation processes, reflecting the industry's reliance on measurable and objective indicators like cost variance, schedule variance, and ROI. Qualitative methods (30%) emphasize the collection of stakeholder insights, often through interviews, focus groups, and case studies**.** Mixed-methods approaches (20%) combine the strengths of both quantitative and qualitative data, allowing for a holistic view of project success that incorporates both objective metrics and stakeholder perspectives. This distribution highlights the increasing recognition of the value of mixed-methods approaches in comprehensive project evaluations.

4.5 Comparison with Global Practices

The review reveals that Nigerian construction evaluation practices are gradually aligning with global best practices (Table 4). Internationally, the evaluation of construction projects has shifted towards holistic, multi-dimensional criteria. Global practices prioritize sustainability, stakeholder engagement, and community well-being as essential elements of project success [17].

Table 4: Alignment of Nigerian Practices with Global Best Practices

Evaluation Criterion	Nigerian Practice	Global Best Practice
Time	High focus on timely completion	Strong focus on timely delivery
Cost	Emphasis on cost control	Life-cycle cost assessment
Quality	Compliance with client specifications	Emphasis on long-term functionality
Sustainability	Emerging focus	Core focus due to global climate goals
Stakeholder Satisfaction	Gaining traction	Core focus in global best practices

Table 4 highlights the alignment between Nigerian construction project evaluation

practices and global best practices**.** The comparison reveals a growing convergence of Nigerian practices with international standards, particularly in the areas of sustainability and stakeholder satisfaction**.** While traditional success criteria such as time, cost, and quality continue to be a major focus for both Nigeria and global contexts, there is a notable shift in emphasis. Nigerian construction firms are gradually incorporating modern success criteria, including sustainability and stakeholder satisfaction, which have long been a key part of global best practices**.** This alignment is driven by global sustainability initiatives, pressure from international investors, and regulatory reforms.

4.6 Discussion

4.6.1 Interpretation of Findings

The findings of this study reveal the evolving nature of construction project success evaluation criteria. Traditional criteria, such as time, cost, and quality, continue to play a fundamental role in project evaluation due to their direct impact on project outcomes [49]. These criteria are essential for planning, monitoring, and controlling construction projects, as they offer objective, quantifiable, and standardized metrics. However, the growing complexity of construction projects and increasing awareness of sustainability and stakeholder engagement have necessitated the adoption of modern success criteria.
The shift towards sustainability, stakeholder satisfaction, and worker safety as success criteria is driven by industry-wide transformations and policy changes. Sustainability has become a core focus, reflecting the global movement towards responsible and environmentally friendly construction practices. This shift aligns with the objectives of the United Nations' Sustainable Development Goals (SDGs) and other international frameworks promoting sustainable development [50]. Sustainability criteria prioritize energy efficiency, waste minimization, and the use of environmentally friendly materials, enabling firms to reduce their ecological footprint and enhance corporate social responsibility.

Stakeholder satisfaction has also emerged as a major driver of project success, particularly in large-scale infrastructure projects with multiple stakeholders, including clients, contractors, regulators, and community members. By prioritizing stakeholder engagement, projects can foster trust, reduce conflicts, and improve acceptance among stakeholders [51]. The findings suggest that integrating stakeholder satisfaction into evaluation frameworks enhances transparency and strengthens collaborative decision-making. Similarly, worker safety is another critical success criterion, as it directly impacts worker well-being, productivity, and compliance with occupational health and safety regulations.

A key finding of this study is the increasing adoption of mixed-methods evaluation. The integration of quantitative and qualitative methods has proven effective in capturing the multifaceted nature of project success. Quantitative methods, such as performance metrics and cost variance analysis, provide objective insights into time, cost, and quality, while qualitative methods, such as interviews and case studies, capture subjective insights from stakeholders [52]. By combining these methods, a more comprehensive and holistic evaluation of project success can be achieved, ensuring that both objective measures and stakeholder experiences are considered [53].

4.6.2 Implications for Practice in the Nigerian Construction Industry

The findings of this study have significant implications for the Nigerian construction industry. Industry practitioners must move beyond the narrow focus on time, cost, and quality to adopt a broader, holistic framework that includes modern success criteria such as sustainability, stakeholder satisfaction, and worker safety. Incorporating these modern

criteria will enable Nigerian construction firms to align with global best practices and achieve improved project delivery.

The integration of sustainability into project evaluation frameworks has multiple benefits for practitioners. Sustainability metrics such as energy efficiency, waste reduction, and resource conservation promote environmentally responsible construction practices. Projects that prioritize sustainability are more likely to secure public support, receive favorable regulatory approvals, and improve their social license to operate [50]. Additionally, construction firms that embed sustainability in their evaluation frameworks may benefit from access to green financing, tax incentives, and opportunities to participate in sustainable infrastructure projects.

Stakeholder engagement is another critical implication. Projects that incorporate stakeholder perspectives are more likely to avoid delays, disputes, and community resistance. This study highlights that stakeholder engagement can be enhanced through regular consultations, community feedback mechanisms, and open communication channels throughout the project lifecycle [51]. Effective stakeholder management also ensures that community grievances are resolved promptly, reducing the risk of project disruption and cost escalation.

The adoption of a mixed-methods evaluation approach provides a well-rounded perspective on project success. For industry practitioners, this approach ensures a more nuanced and comprehensive evaluation of project outcomes. Quantitative methods, such as cost variance, schedule variance, and return on investment (ROI), are essential for tracking performance, while qualitative methods provide critical stakeholder insights. This approach allows for the triangulation of data from multiple sources, enhancing the validity and reliability of evaluation results [54]. By adopting a mixed-methods approach, firms can gain deeper insights into project performance and identify areas for improvement.

4.6.3 Recommendations for Policy and Practice

The results of this study highlight the need for regulatory and policy reforms to improve project success evaluation practices in Nigeria. Government regulatory agencies, industry bodies, and policymakers should promote the adoption of modern success criteria within project evaluation frameworks. Regulatory frameworks should require the incorporation of sustainability, stakeholder satisfaction, and worker safety in all large-scale infrastructure projects. Government authorities should mandate the submission of sustainability reports for large-scale construction projects. This could be achieved by requiring firms to report on waste management, energy use, and environmental impact as part of the project evaluation process. Construction firms that meet sustainability and stakeholder engagement standards should be eligible for certification, such as green building certification, and financial incentives, such as tax rebates or access to low-interest green loans [50].

Industry bodies should publish stakeholder engagement guidelines that require firms to conduct community consultations, establish grievance redress mechanisms, and create stakeholder feedback loops during project delivery. Policymakers should promote the adoption of mixed-methods evaluation frameworks that incorporate both quantitative and qualitative data. This approach ensures a comprehensive assessment of project success and offers more holistic insights into stakeholder experiences. Industry practitioners should be trained to use mixed-methods evaluation frameworks. Capacity-building initiatives should target project managers, site supervisors, and quality assurance personnel, equipping them with skills in stakeholder engagement, sustainability reporting, and qualitative data analysis [52]. The development of digital tools for data collection and evaluation can streamline the integration of quantitative and qualitative evaluation. Data visualization software, stakeholder feedback systems, and performance dashboards can facilitate better analysis and reporting. Construction industry forums, workshops, and conferences should be established to promote the exchange of best practices. Practitioners

can learn from successful case studies, enhancing the industry's capacity for comprehensive project evaluation [55].

4.6.4 Limitations of the Study

Several limitations of this study must be acknowledged. First, the study was limited to literature published between 2019 and 2024. The exclusion of earlier studies may have overlooked foundational theories and models on construction project success. Although the review focused on contemporary studies to ensure relevance, future research could incorporate a broader time frame to capture earlier conceptual frameworks [56].

Secondly, the study focused on the Nigerian construction industry, which may limit the generalizability of the findings to other countries. While Nigeria's regulatory, social, and economic conditions were considered in the analysis, construction industry practices differ across regions. Future studies could conduct comparative research across different African countries or emerging economies to identify shared and context-specific evaluation criteria.

Finally, the reliance on secondary data from published literature may introduce selection bias. The inclusion and exclusion criteria used to select articles may have excluded critical studies published outside mainstream databases. Future research could incorporate primary data collection through stakeholder interviews, focus groups, and field surveys. This would provide first-hand insights into industry practices and enhance the richness of the data.

5. CONCLUSION

This study comprehensively reviewed the evaluation of construction project success in Nigeria, advocating for an integrated approach that combines traditional metrics—time, cost, and quality—with modern criteria such as sustainability, stakeholder satisfaction, and worker safety. While traditional metrics remain vital for their objective and contractual reliability, modern criteria address the broader goals of sustainability and global best practices. The mixed-methods approach employed in this study demonstrated how blending quantitative and qualitative data captures both measurable outcomes and stakeholder experiences, offering a more holistic assessment of project success.

The study's key contributions include highlighting the evolution of success criteria in the construction industry, from a narrow focus on traditional metrics to a broader framework encompassing environmental, social, and stakeholder impacts. This shift aligns with international trends toward sustainable development and responsible construction practices. Emphasizing stakeholder satisfaction, the study reinforced the critical role of meeting diverse stakeholder needs for achieving long-term project success. Additionally, it showcased the value of mixed-methods frameworks in delivering nuanced evaluations, providing actionable insights for policymakers, industry practitioners, and stakeholders.

Future research should address the practical implementation of these criteria in Nigeria, including challenges such as cost implications, capacity gaps, and the lack of standardized sustainability frameworks. Longitudinal studies are essential to assess the long-term impact of integrating sustainability and stakeholder engagement practices on project outcomes. Developing context-specific evaluation frameworks tailored to Nigeria's unique challenges will enable systematic, consistent assessments while aligning with international best practices. Comparative studies across regions could further enrich insights, offering actionable strategies adaptable to Nigeria's construction sector. By addressing these gaps, future research can build on this study's findings, advancing knowledge and practice in project success evaluation. Such efforts will equip Nigeria's construction industry with robust, sustainable, and socially responsible evaluation

frameworks, supporting the nation's journey toward globally aligned and inclusive construction practices.

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