The Role of Stakeholder Engagement and Communication in Driving Sustainability and Resilience in Construction Projects: A Systematic Literature Review

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Abstract

This systematic review investigates stakeholder engagement and communication roles in construction resilience and sustainability. Drawing on peer-reviewed studies from construction management, sustainability, and organisational communication, the review addresses three questions: operationalisation of engagement, communication practices for collaboration, and how these approaches can combine to support resilience within the construction sector. The review followed PRISMA guidelines, screening studies published between 2010 and 2025 across databases including Scopus, Dimensions AI, and Google Scholar. Inclusion criteria focused on empirical or conceptual works examining engagement and communication in construction-related contexts. Early and regular stakeholder involvement increases adaptive project delivery and long-term sustainability. Two-way, open communication fosters trust, reduces conflict, and allows for problem-solving and collaboration. Engagement and communication create feedback loops that maintain resilience by allowing learning and flexibility. However, the review reported drawbacks such as geographic clustering in Sub-Saharan Africa, descriptive designs, and non-systematic measurement of the environment or social outcomes. To address these gaps, future studies must draw on comparative and longitudinal designs, increase coverage to diverse contexts, and analyse the role of digital innovation in supporting resilient, sustainable construction.

Keywords: Communication, Construction, Resilience, Stakeholder Engagement, Sustainability

1. Introduction

Sustainability and resilience have become vital standards for assessing and providing contemporary construction projects. Since the construction sector plays a significant role in environmental depletion, consumption of resources, and social disturbance, it has faced increasing pressure to integrate sustainable and resilient approaches to its activities (Ahmad Latiffi & Zulkiffli, 2021). These approaches tackle ecological integrity, economic stability, and social responsibility. Around the world, governments, developers, and communities are calling for infrastructure that not only can address near-term needs but also respond to longer-term uncertainties like climate change, urban population growth, and resource constraints (Eyiah-Botwe et al., 2016; Orieno et al., 2024). To meet these objectives, however, it rests on far more than using green materials or energy-efficient technologies. It involves stakeholders' active participation and strong communication tactics throughout the project cycle (Bal et al., 2013; Kaya, 2025).

Stakeholder participation in the construction industry systematically integrates those people, groups, or institutions directly or indirectly influenced by decisions within the project. They encompass contractors, clients, architects, consultants, suppliers, regulatory bodies, and host communities (Buertey et al., 2016). Where stakeholders are involved actively from project initiation through to post-completion, their concerns, interests, and inputs can be better responded to, limiting resistance and maximising project ownership. Engagement allows the construction sector to counter dynamic external pressures, achieve consensus across conflicting interests, and create social capital that supports project resilience and long-term sustainability (Monwabisi et al., 2024; Ebeh et al., 2024). It has thus transformed from a corporate social responsibility duty to a strategic imperative for delivering inclusive and responsive project outcomes (Bernat et al., 2023; Tor et al., 2025).

Communication is the foundation of engagement and sustains collaboration throughout the construction projects. It involves technical, verbal, non-verbal, and digital forms of communication that create mutual understanding (Handford, 2014; Abdul-Fatawu et al., 2024). Ineffective communication causes delays, errors, and waste of resources, but effective communication creates trust, effectiveness, and expectation of disruptions. Public–

private projects, especially, require structured channels of communication to establish roles and objectives (Akintelu et al., 2023; Setiawan et al., 2021). Transparency fosters resilience by enabling flexibility and adaptive decision-making, and cooperation by open communication fosters sustainability by allowing innovation and responsibility (Li, 2024; Ekwuno, 2022).

The intersection of engagement and communication has emerged as a significant point of attention in academia and practice. Engagement promotes inclusivity, while communication transforms inclusivity into coordinated action (Aasen & Klakegg, 2023; Khan et al., 2018). Together, they aim to improve risk management, problem-solving, and legitimacy, aligning disparate needs for sustainability and enhancing adaptability towards resilience. Projects governed by inclusive dialogue develop trust, respect for regulations, and stability during shocks, while those lacking such processes may face resistance or reputational loss (Mensah & Owusu-Manu, 2021; Olatinwo et al., 2025; Oliver, 2020; Obed Ebeh et al., 2024). Stakeholder engagement and communication are thus strategic facilitators of sustainable and resilient outcomes rather than mere procedural requirements

Inherent in stakeholder engagement is communication. Communication in construction projects goes beyond documentation or reporting but includes a broad range of verbal, non-verbal, and technological interactions that convey information, coordinate action, and manage expectations (Handford, 2014; Abdul-Fatawu et al., 2024). Poor communication results in misunderstandings, time loss, and wastage of resources, while good communication builds trust, defines roles, and generates feedback loops that enable project teams to prepare for and respond to arising challenges (Akintelu et al., 2023; Setiawan et al., 2021). In multi-stakeholder settings like public-private partnerships and global infrastructure projects, organised communication systems are necessary for aligning goals and limiting ambiguity (Li, 2024; Ekwuno, 2022).

The crossroads of communication and stakeholder engagement have garnered more scholarly focus as both concepts frame the same project objectives, most importantly, those involving sustainability and resilience. Engagement is the basis for inclusion, and communication is the vehicle for inclusion. They collectively form the foundation for practices like risk reduction, collective decision-making, openness, and community acceptance (Aasen & Klakegg, 2023; Khan et al., 2018). For instance, in areas where construction has profound socio-political connotations, like much of Africa and Southeast Asia, poor communication and tokenistic consultation have been associated with the failure of projects and resistance from local communities (Mensah & Owusu-Manu, 2021; Olatinwo et al., 2025). On the other hand, those initiatives that embrace inclusive dialogue and responsiveness in their governance mechanisms shall be more likely to gain social legitimacy and environmental compliance (Oliver, 2020; Ebeh et al., 2024).

While these associations have been confirmed, existing literature treats stakeholder engagement and communication as isolated variables. Much of the literature focuses either on their effect on project success metrics such as time, cost, and quality or on their procedural and ethical function within project governance (Castro et al., 2024). Comparatively less work is done on how these two combined practices impact sustainability and resilience outcomes in measurable, empirical terms. Furthermore, theoretical synthesis is also limited. Few in-depth frameworks elucidate causal links between engagement, communication, and sustainable construction performance in various socio-political and economic contexts (Kaya, 2025; Song et al., 2025).

This paper intends to fill the gap by presenting a holistic review of existing research on the interlinkages between stakeholder engagement, communication practices, and achieving sustainability and resilience in construction. Drawing on a broad range of academic perspectives, the review highlights how these influences shape project performance along the environmental, social, and institutional dimensions. It identifies prevalent themes and issues in different contexts and project types and clarifies where empirical and theoretical clarification is called for. Through this approach, the study strives to enhance knowledge about processes and conditions under which stakeholder-oriented communication strategies can promote more sustainable and resilient construction outcomes.

2. Background

2.1. Sustainability and Resilience in Construction Projects

Historically, construction governance has been dominated by hierarchical, expert-dominated models prioritising technical feasibility, cost-effectiveness, and prompt completion. In these systems, the involvement of stakeholders and communication were primarily seen as peripheral to and not central to the achievement of project objectives (Ekwuno, 2022). In the face of heightened complexity in infrastructure development across socio-political, environmental, and technological realms, expectations have shifted towards participatory, adaptive, and collaborative modes of governance (Kaya, 2025; Bernat et al., 2023). These models emphasise joint responsibility, stakeholder responsiveness, and ongoing feedback integration as pillars for adaptive and sustainable results.

The advent of megaprojects, circular economy conditions, and climate-resilient urban infrastructure has highlighted the limitations of traditional approaches and the need for multi-actor coordination across a broad spectrum

of project stages (Eyiah-Botwe et al., 2016; Orieno et al., 2024). In such terminology, sustainability extends to resource productivity, community well-being, and environmental health. Resilience is increasingly seen as the system's ability to adapt, learn, and rebound from environmental and institutional shocks (Song et al., 2025; Tor et al., 2025). All such paradigms call for adaptive interactions between internal and external stakeholders in ways that disrupt conventional project management silos.

2.2. Reconceptualising Engagement and Communication

Stakeholder engagement is becoming a strategic exercise from the compliance-based routine it used to be, aimed at co-creating project value and legitimacy for the organisation. This is the general shift towards inclusive development planning, with stakeholder insight plugged into goal-setting, risk anticipation, and design iterations (Monwabisi et al., 2024; Ebeh et al., 2024). Unlike passive consultation, engagement is a recursive dialogue that increasingly shapes project direction and fosters trust and responsibility. Studies demonstrate that timely and context-specific engagement reduces implementation restrictions and aligns construction delivery with local ambitions and environmental constraints (Khan et al., 2018; Li, 2024).

In this case, communication is the integrating mechanism that renders stakeholder engagement meaningful. It is a matter of passing on information, structuring conversation, facilitating interest, and making collective action possible (Handford, 2014; Abdul-Fatawu et al., 2024). Communication systems underpinning cultural diversity, power differences, and technical complexity are necessary to make latent threats and emergent opportunities apparent (Aasen & Klakegg, 2023). Poor communication in poor or controversial environments, such as urban renewal locations or post-conflict reconstruction environments, increases mistrust, while iterative and open communication helps to mitigate conflict and ensure project decision legitimacy (Olatinwo et al., 2025; Mensah & Owusu-Manu, 2021).

What shines through is a growing realisation that communication and interaction are not ancillary activities but elemental design features of resilient and sustainable construction projects. Their operation is still disjointed and disparately theorised in practice and literature. The fragmentation suggests the need for integrated frameworks that put these dynamics into models of construction governance and evaluate their worth to resilience beyond project horizons.

3. Research Approaches

Communication and stakeholder engagement are overarching themes in various fields of study, including construction management, sustainability science, organisational communication, and infrastructure governance. Through this transdisciplinary reach, a substantial body of research is most likely linked to implementing these concepts to enhance sustainability and resilience in construction. In the interest of an analytical and transparent review exercise, a systematic literature review (SLR) approach was followed. The SLR method enables systematic identification, selection, and synthesis of relevant peer-reviewed papers, so it is instrumental in synthesising fragmented knowledge, identifying theoretical gaps, and mapping the direction of future studies. SLRs also gained popularity in construction studies as practical tools for assessing stakeholder management, risk regulation, and sustainability integration (Khan et al., 2018; Song et al., 2025).

The SLR for the study employed a three-phase approach: (1) reviewing planning, (2) conducting a review, and (3) synthesising and reporting. The review aimed at publications investigating the interaction of stakeholder engagement, communication practice, sustainability, and resilience in construction or infrastructure projects.

3.1 Planning the Review

The scope of the review was derived from the aim to examine how stakeholder engagement and communication contribute to promoting sustainability and resilience in construction projects. From the background, it can be seen that the review strives to combine empirical and conceptual understanding on how such practice contributes to adaptive capacity, inclusive governance, and sustainable value creation in building environments. The review drew on the following questions of study:

1. How is stakeholder engagement operationalised in construction projects to support sustainability and resilience outcomes?
2. What communication practices facilitate effective stakeholder collaboration throughout construction projects to enhance sustainability and resilience outcomes?
3. How do engagement and communication strategies interact to strengthen resilience and long-term sustainability in construction?

3.2 Conducting the Review

A systematic literature review (SLR) was implemented based on typical evidence-based research procedures to achieve transparency, replicability, and scholarly rigor. This was done through organized search, screening, and

selecting applicable peer-reviewed research based on set criteria. A Boolean keyword string was derived to assist in the search for the main ideas of the given study: stakeholder engagement, communication, sustainability, resilience, and the construction industry. The search string that was the final one was:
("stakeholder engagement" OR "stakeholder involvement" OR "stakeholder participation" OR "stakeholder communication") AND ("communication" OR "information sharing" OR "knowledge transfer") AND ("sustainability" OR "sustainable development" OR "green building") AND ("resilience" OR "adaptive capacity" OR "risk management" OR "disaster resilience") AND ("construction project" OR "infrastructure project" OR "construction industry")

3.3 Screening and Selection Process

This review followed the **PRISMA 2020 guidelines** for systematic reviews. The protocol was prepared in advance to ensure transparent reporting, replicability, and minimisation of bias. Literature selection, screening, and thematic coding were conducted in structured stages. At least two reviewers independently participated in screening, with disagreements resolved through consensus.

Inclusion Criteria

- Peer-reviewed or empirical studies on stakeholder engagement/communication in construction or project contexts.
- Must link engagement/communication to sustainability or resilience.
- Covers construction, infrastructure, megaprojects, or green initiatives.
- Any country or regional context is noted if given.

Exclusion Criteria

- Reviews, editorials, or opinion pieces without data/frameworks.
- Technical, financial, or costing studies without engagement/communication.
- Non-construction unless project-based with a sustainability focus.
- No full text or insufficient methods.

The search was conducted across three academic databases: Scopus (n = 280), Dimensions AI (n = 134), and Google Scholar (n = 360), yielding a total of 744 records. These platforms were chosen due to the extensive coverage of the construction, sustainability, and stakeholder engagement literature coverage. After removing 187 duplicate entries of the initial 744 articles as a pool, 557 unique records were screened by title, abstract, and keywords. Of these, 468 articles were excluded for not addressing stakeholder engagement, communication, sustainability, or resilience in construction.

89 specific reports were identified and retrieved as full texts for eligibility assessment. 33 articles were excluded due to insufficient conceptual or empirical relevance to the study, and 28 were excluded for format reasons (e.g conference papers, book chapters, or editorials). The remaining 27 articles were peer-reviewed journal articles that formed the empirical and theoretical basis for the thematic analysis presented in the following section. These 27 articles provided substantial details on how stakeholder engagement and communication practices enhance the sustainability and resilience of construction projects. The given studies of choice form the empirical and theoretical basis of the presented thematic analysis in the following section. See Figure 1 for the selection process.

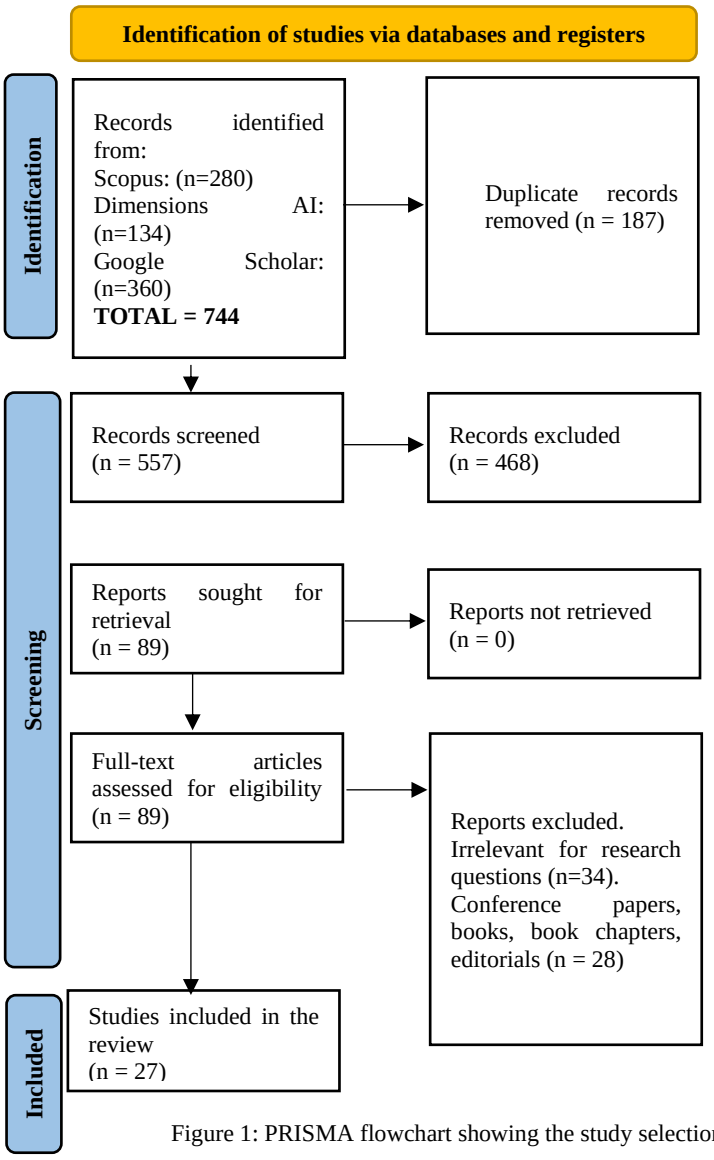

Figure 1: PRISMA flowchart showing the study selection process

3.4 Synthesising and Reporting

A descriptive and thematic synthesis was completed to synthesise and present the systematic review results. The descriptive aspect offered an organised summary of the chosen literature, encompassing publication date trends, journal source, and methodological orientation. Each article was explored to identify whether qualitative, quantitative, or mixed-method paradigms were utilised. This gave insight into methodological maturity and diversity of research on stakeholder communication and engagement in the construction industry (Song et al., 2025; Khan et al., 2018). The review also outlined the regional focus of the research, highlighting the contexts most often explored, such as sub-Saharan Africa, Southeast Asia, and Europe, where construction stakeholder dynamics are operationally and politically pertinent (Ebeh et al., 2024; Aasen & Klakegg, 2023).

Thematic analysis used qualitative content analysis to identify recurring patterns relevant to the research questions. Data extraction was organised in a structured spreadsheet, and open coding was first applied to capture concepts such as early engagement, trust, digital communication, and adaptive governance. Axial coding was then used to group related codes into broader categories like participatory planning, risk communication, and digital collaboration. These codes were then refined into final themes reflecting sustainability and resilience outcomes. For example, Abdul-Fatawu et al. (2024) and Monwabisi et al. (2024) were coded under early-stage engagement and open

communication, which developed into the theme "trust-building for resilient project delivery." To enhance reliability, two reviewers coded the studies independently and compared results. While formal inter-rater reliability statistics (e.g., Cohen's kappa) were not calculated, disagreements were discussed until consensus, and peer debriefing was used to validate the themes.

During synthesis, several articles were found to cut across multiple themes. For instance, Ekwuno (2022) and Bernat et al. (2023) addressed both stakeholder participation and digital platforms for communication in the context of project sustainability. Others, such as Tor et al. (2025), linked engagement methods with timely project completion and adaptive ability (appendix table 1). Such insights enriched the thematic framework and informed the subsequent discussion. Synthesised results are considered in Section 4 through a hierarchical debate of the major themes and how these connect.

4. Results

4.1 Distribution of Studies by Year

The temporal distribution of studies reveals a gradual but notable increase in research on stakeholder engagement and communication in sustainable and resilient construction projects. Early contributions were sparse, with only one study each in 2013, 2018, and 2020, and slightly higher representation in 2014 and 2016. However, momentum began to build after 2020, with two studies each in 2021 and 2022, and a marked rise in 2023 with four publications. The trend peaked in 2024, and nine studies were recorded, representing the most substantial output within the review period. Although fewer studies were published in 2025, the figure still reflects ongoing scholarly attention. This pattern demonstrates that stakeholder-focused sustainability and resilience research is gaining traction, moving from isolated case-based explorations to more consistent academic inquiry. As shown in figure 2, the overall trajectory underscores the growing recognition of stakeholder engagement as a priority in construction research.

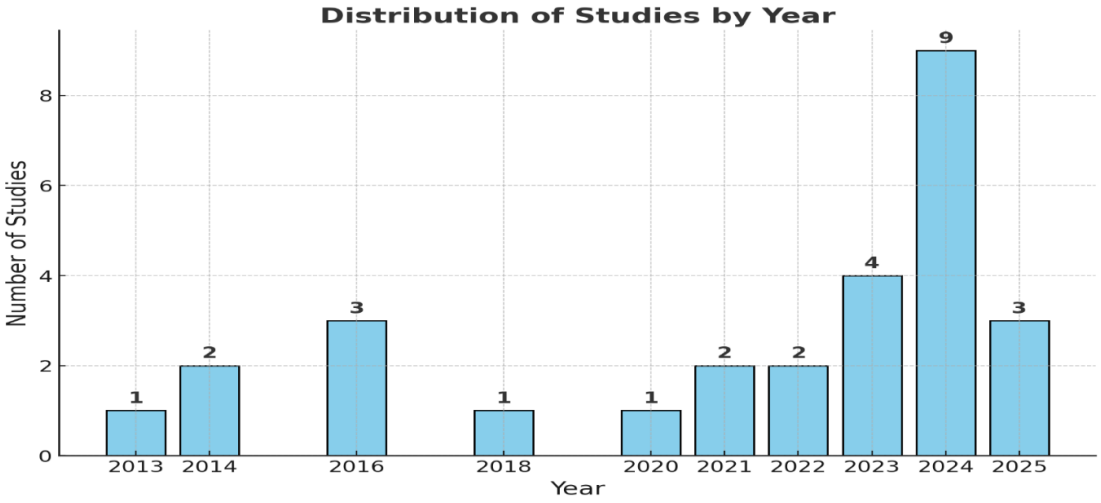

Figure 2: Distribution of Studies by Year

4.2 Distribution of Articles across Journal Categories

The reviewed studies were published across three main journal categories, with construction and project management outlets dominating the sample. As shown in Figure 3, 12 articles (43%) appeared in specialised journals such as IJSRP, IJDS, AJER, and IRJET, reflecting the strong disciplinary focus on operational aspects of project delivery and stakeholder engagement. A significant share of studies, 8 articles (29%), were published in sustainability and environment-oriented journals like Sustainability, Frontiers in Built Environment, and Buildings. This distribution underscores the recognition of stakeholder engagement as a vital driver of environmental performance and resilience outcomes. Another 8 articles (29%) were found in general management or interdisciplinary outlets, including PM World Journal and regional reviews, highlighting the broader relevance of engagement and communication beyond construction-specific domains. The balance across categories suggests that while construction-focused platforms

remain central, sustainability and interdisciplinary perspectives are increasingly shaping the discourse on resilient project delivery.

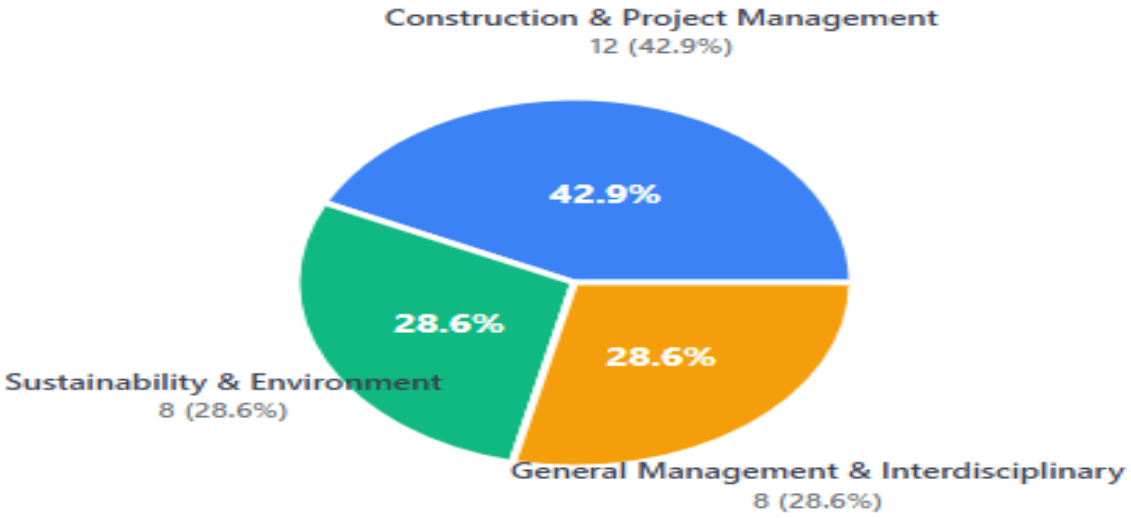

Figure 3: Distribution of Articles across Journal Categories

4.3 Distribution of Research Methods in Reviewed Articles

The methodological distribution of the reviewed studies highlights a firm reliance on surveys as the dominant research approach. As shown in Figure 4, nine studies (e.g., Abdul-Fatawu, 2024; Song, 2025) employed survey designs, emphasising collecting broad stakeholder perspectives through structured instruments. Case studies represented the second most common method, with five examples, Li (2024) and Eyiah-Botwe (2016), offering context-rich insights into specific projects. Conceptual analyses were also prominent, accounting for six studies, including Khan (2018) and TOR (2025), which proposed frameworks and models without empirical validation. Other approaches appeared less frequently, with mixed methods (Bernat, 2023), literature reviews (Orieno, 2024), and simulation studies (Kaya, 2025) each making smaller contributions. Cross-sectional and discourse methods were the least represented, with only one study each. This distribution suggests that while empirical approaches are growing, conceptual and exploratory methods significantly shape theoretical foundations for stakeholder engagement and resilience research.

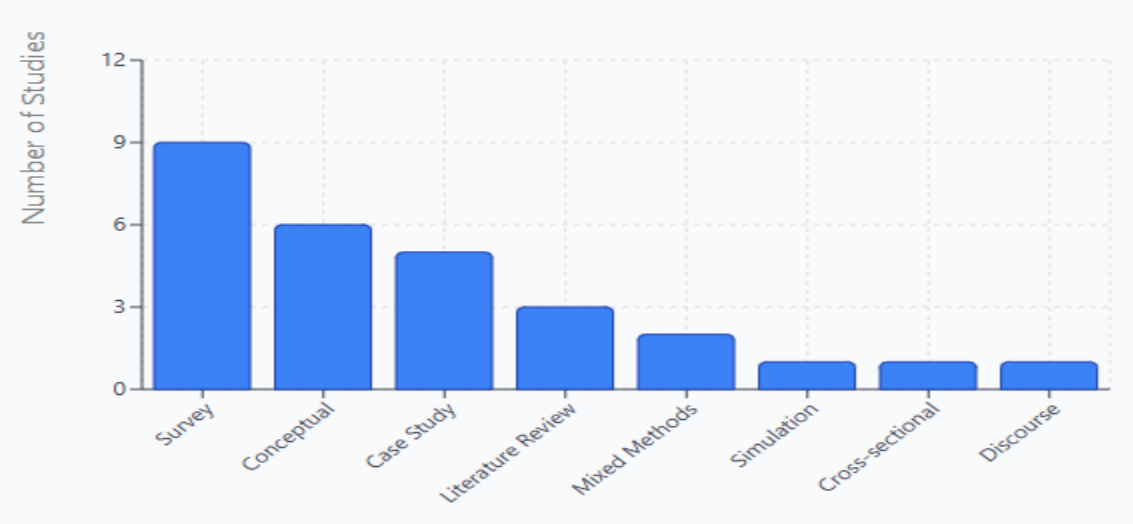

Figure 4: Distribution of Research Methods in Reviewed Articles

4.4 Distribution of Studies by Sustainability vs. Resilience Emphasis

The reviewed studies demonstrate varied emphases on sustainability, resilience, or both. Sustainability-focused research dominated, with 15 studies, including Bal (2013), Eyiah-Botwe (2016), and Monwabisi et al. (2024). These works primarily examined sustainable practices, governance structures, and environmental outcomes within construction. In contrast, 13 studies emphasised resilience, such as Handford (2014), Mensah and Owusu-Manu (2021), and Akintelu et al. (2023), addressing adaptability, risk management, and institutional responses to disruption. Only three studies, Song et al. (2025), Kaya (2025), and Alqaisi (2024), explicitly integrated both dimensions, framing sustainability and resilience as interdependent outcomes. This imbalance highlights that while sustainability remains a central concern in construction research, resilience has emerged as a distinct but growing focus, particularly in recent years. The limited overlap suggests further opportunities for integrating sustainability and resilience frameworks to capture their interconnected role in adaptive project delivery.

4.5 Cross-Cutting Linkages in Reviewed Studies

The reviewed studies revealed several cross-cutting linkages that connect engagement and communication practices with sustainability and resilience outcomes. As summarised in Table 7, trust emerged as a critical factor, linking engagement to resilience by fostering collaboration, risk sharing, and continuity (Abdul-Fatawu, 2024; Buertey, 2016; Song, 2025). Transparency, in turn, connected communication with sustainability by reinforcing legitimacy, accountability, and social acceptance (Obed Ebeh, 2024; Lyulyov, 2023; Oliver, 2020). Adaptability was highlighted as a communication-to-resilience mechanism, enabling projects to respond rapidly to crises and manage conflict effectively (Aasen & Klakegg, 2023; Setiawan, 2021; Olatinwo, 2025). Leadership was a moderating factor across engagement and communication, improving coordination, empowering stakeholders, and ensuring clarity (Ahmad Latiffi & Zulkiffli, 2021; Mensah & Owusu-Manu, 2021). Finally, policy and regulatory contexts shaped the engagement-to-sustainability pathway by aligning projects with standards and promoting competitive green practices (Eyiah-Botwe, 2016; Kaya, 2025; Adebayo, 2024). Collectively, these linkages illustrate how enabling conditions underpin effective sustainability and resilience outcomes as summarised in the table below.

Linkage Factor	Connection Point	Outcome Supported	Illustrative Studies
Trust	Engagement ↔ Resilience	Builds reliable collaboration, risk sharing, and continuity	Abdul-Fatawu (2024), Buertey (2016), Song (2025)
Transparency	Communication ↔ Sustainability	Strengthens legitimacy, social acceptance, and accountability	Obed Ebeh (2024), Lyulyov (2023), Oliver (2020)

Adaptability	Communication ↔ Resilience	Enables rapid response, conflict management, and crisis adjustment	Aasen & Klakegg (2023), Setiawan (2021), Olatinwo (2025)
Leadership	Moderates Engagement + Communication	Improves coordination, empowers stakeholders, and ensures clarity	Ahmad Latiffi & Zulkiffli (2021), Mensah & Owusu-Manu (2021)
Policy / Regulatory Context	Shapes engagement → Sustainability pathway	Ensures alignment with standards, promotes green competitiveness	Eyiah-Botwe (2016), Kaya (2025), Adebayo (2024)

5. Discussion

5.1. Operationalising Stakeholder Engagement in Construction Projects

5.1.1. Early-stage Involvement and Planning Integration

Early stakeholder participation is increasingly vital to bridging project objectives, community aspirations, and sustainability goals. Bal et al. (2013) highlighted that early-stage involvement during planning allows early detection of key social and environmental issues, making it possible to implement early mitigation strategies. Similarly, Eyiah-Botwe et al. (2016) underscored that early engagement fosters collective ownership and long-term engagement of multiple actors, especially in mega projects. Monwabisi et al. (2024) testified to this by showing how early stakeholder participation led to enhanced coordination and reduced project delays in South African infrastructure projects. Abdul-Fatawu et al. (2024) also observed that stakeholder participation at initial stages optimises communication efficiency across the entire project duration. Tor et al. (2025) supported this stance by arguing that early-stage engagement is not only a best practice but also a necessity for risk management of resistance on the part of the community, compliance issues, and requirements for adaptive design.

5.1.2. Role Clarity and Responsibility Mapping

Clear stakeholder responsibility and role definition encourage accountability and reduce errors in coordination within construction projects. Ebeh et al. (2024) highlighted that well-defined responsibilities reduce duplicated effort and role conflict. Khan et al. (2018) provided empirical evidence that role ambiguity will often lead to failure in communication and slippage of deadlines. Abdul-Fatawu et al. (2024) recommended responsibility matrices like RACI to codify stakeholder inputs and promote shared understanding. Bernat et al. (2023) establish that role mapping transparency would enable easier monitoring of progress, measuring stakeholder influence, and facilitating knowledge sharing. Findings by Olatinwo et al. (2025) indicated that projects with high role clarity among their stakeholders were completed on time and cost less since there was better delegation and reduced rework. These studies highlight that stakeholder engagement must be institutionalised via strategic allocation of roles for optimal project performance.

5.1.3. Participatory Design and Co-decision Making

Co-decision making and participatory design lie at the core of ensuring stakeholder alignment and sustainability of projects in the long term. Bernat et al. (2023) demonstrated how virtual teams facilitating sustainable project delivery were advantaged by shared platforms enabling collaborative design meetings, especially during the planning and risk management stages. Song et al. (2025) noted that participatory strategies raise stakeholders' ownership by shifting the level of involvement from consultation to co-creation in addressing challenging sustainability targets. Monwabisi et al. (2024) established that stakeholder involvement in key design decisions increased transparency and public acceptability, mainly in public infrastructure projects. Ebeh et al. (2024) also illustrated that citizens who participated in co-decision-making were empowered and more likely to lobby for implementing environmental protection. Abdul-Fatawu et al. (2024) also linked co-decision systems with better team cohesion, which reduced conflict and delay in decision-making. The research illustrates that participatory design is a governance tool and a mechanism for embedding resilience and inclusivity into project frameworks.

5.1.4. Stakeholder Engagement Models for Risk-Responsive and Adaptive Project Delivery

Stakeholder engagement increasingly relies on structured tools and models, such as RACI matrices, stakeholder mapping and engagement typologies. Abdul-Fatawu et al. (2024) found that formal communication structures such

as the RACI model improved role clarity and reduced information silos. Li (2024) demonstrated that stakeholder mapping enabled project managers to anticipate opposition and adjust strategies across stakeholder levels. Khan et al. (2018) proposed a stakeholder strategy spectrum to differentiate between monitoring, informing, consulting and partnering, and showed that this approach facilitated more critical allocation of resources. Bernat et al. (2023) highlighted that digital tools increased engagement efficiency in geographically dispersed project settings, particularly in sustainability-driven projects. Ebeh et al. (2024) also emphasised that systematic community engagement strategies, with set timescales, methodologies and expectations for involvement, enhanced accountability and participation. Together, these strategies institutionalise stakeholder participation in ways that are measurable, repeatable, responsive and adaptable to shifting project dynamics.

Beyond structured tools, effective engagement models also incorporate open communication, power balancing and adaptive collaboration within decision-making frameworks. Open communication fosters preparedness by ensuring that stakeholders anticipate risks and share early warnings about sustainability challenges (Nwosu & Ukanwa, 2022). Conflict resolution mechanisms further strengthen sustainable outcomes by promoting equal power-sharing and reducing dominance (Adebayo et al., 2024). Adaptive governance strategies provide flexibility, enabling decisions to be modified in response to evolving socio-environmental challenges in construction projects (Song et al., 2025). Through these systematic participatory mechanisms, sustainability becomes embedded in project implementation, while resilience is enacted as an adaptive practice (Kaya, 2025). Consequently, embedding engagement models ensures long-term sustainability, adaptive resilience and continuous improvement in project governance (Bernat et al., 2023).

5.1.5. Institutional and Policy Support for Stakeholder Inclusion

The success of stakeholder engagement is also reliant on the presence of institutional and policy frameworks supporting inclusive practice. Tor et al. (2025) noted that policy-led stakeholder consultation significantly improved the project delivery times of Nigerian infrastructure development. Kaya (2025) also noted that institutional transition to circular construction is based on enabler policies that inculcate collaboration among stakeholders like regulators, contractors, and civil society. Alqaisi (2018) emphasised that stakeholder engagement and communication have greater influence on project outcomes when guided by structured organisational policies and clearly defined processes, highlighting the institutional role in facilitating consistent and accountable collaboration. Monwabisi et al. (2024) found that when involvement is backed up with formal mandates and monitoring by regulatory bodies, it is transformed from symbolic behaviour to a process. Eyiah-Botwe et al. (2016) argued that strong policy underpinnings are essential for large-scale projects, where various interests and power imbalances require formalised control. These findings affirm that stakeholder inclusion institutionalisation through policy improves sustainable and resilient construction outcomes.

5.2 Communication Practices that Support Stakeholder Collaboration

5.2.1. Transparent and Timely Information Sharing

Transparent and timely information sharing is one of the most vital functions that help avert stakeholder distrust and prevent project disruptions. According to Abdul-Fatawu et al. (2024), consistent and on-time communication averts misalignment and the risk of project conflict at its execution. According to Ekwuno (2022), good communication leads to mutual understanding among the stakeholders, especially in time-sensitive or high-risk projects. Mensah and Owusu-Manu (2021) emphasised the value of communications planning to ensure news is shared at key milestones so that there can be more clarity on deliverables, expectations, and roles. Ebeh et al. (2024) showed that trust in the project team was significantly increased when local communities were frequently briefed through planned briefings. Nwosu and Ukanwa (2022) also documented how open communication channels led to more contractor-client accountability. These studies affirm that communication must be timely, purposeful, and inclusive to ensure hassle-free cooperation during project stages.

5.2.2. Application of Digital Communication Tools and BIM Platforms

The application of digital communication tools such as Building Information Modelling (BIM), cloud platforms, and smartphone applications has transformed stakeholder engagement in modern construction projects. Bernat et al. (2023) illustrated how virtual collaboration platforms enhanced participation among remote teams across distant locations, especially in sustainability-oriented projects. Song et al. (2025) emphasised using digital tools as a key aspect of risk management strategies, with real-time feedback and updates from stakeholders. Olatinwo et al. (2025) suggested that information exchange between project managers and site workers through mobile-based communication was efficient, resulting in timely decision-making. Akintelu et al. (2023) viewed digital platforms as helping to document

engagement records, creating a trace for stakeholders to be held accountable. Abdul-Fatawu et al. (2024) supported this by illustrating how formal digital reporting mechanisms reduced delays that resulted from manual coordination. Combined evidence is that digital channels are not just enablers of efficiency but also imperative to facilitating inclusiveness and responsiveness in stakeholder communication.

5.2.3. Conflict Resolution and Feedback Loops

Effective communication structures facilitate early detection of conflicts and their resolution through systematic feedback loops. Abdul-Fatawu et al. (2024) demonstrated how integrating stakeholder feedback mechanisms into project communication strategies helped resolve tensions before they became intolerable. Akintelu et al. (2023) highlighted the need for continuous interaction and feedback between project stakeholders in preventing misunderstandings and aligning expectations. Mensah and Owusu-Manu (2021) found that constant feedback helped contractors and clients readjust timelines and budgets due to setbacks. Bernat et al. (2023) also noted that feedback loops involved adaptive learning and knowledge sharing, particularly in virtual teams. Ekwuno (2022) also noted how after-event reviews enabled learning by project managers from stakeholder problems and integrating them into follow-on communication plans. The same is evidence that conflict resolution is a process, not after the fact, but to be incorporated into iterative and proactive communication systems.

5.2.4. Cultural and Language Aspects of Communication

It is imperative to ensure cultural and linguistic differences in inclusive stakeholder communication. According to Aasen and Klakegg (2023), cultural fit often leads to miscommunication and disengagement, particularly among multicultural project teams. Handford (2014) emphasised that technical language and hierarchical norms impact construction communication, which may leave non-expert stakeholders out. Ebeh et al. (2024) proposed using local languages and culturally sensitive messages to engage indigenous communities in project discourse. Abdul-Fatawu et al. (2024) testified that stakeholder cooperation enhanced considerably when cultural norms were followed, particularly in community-based projects. Eyiah-Botwe et al. (2016) also pointed out that gendered communication patterns can affect stakeholder participation in patriarchal societies, necessitating context-sensitive communication approaches. These findings suggest that awareness and integration of cultural and linguistic diversity into communicative practices enhance stakeholders' acceptance and project legitimacy.

5.2.5. Ongoing Stakeholder Dialogue Across Project Phases

Ongoing dialogue across all stages of the project strengthens stakeholder relationships and adaptability. Abdul-Fatawu et al. (2024) highlighted the significance of stakeholder dialogue from project commencement to completion to post-construction analysis. Song et al. (2025) concluded that ongoing communication was crucial in revising project strategies as environmental and social situations changed. Li (2024) added that ongoing communication reduced resistance and allowed smooth transitions during project milestones. Olatinwo et al. (2025) indicated that ongoing interactions improved inter-site teams' and external stakeholders' coordination, particularly with formalised communication systems. Monwabisi et al. (2024) noted that long-term engagement guaranteed institutional memory, facilitating better learning and continuity of such projects. The evidence attests to the need for constant stakeholder dialogue not only for short-term problem-solving but also to ensure relations that are needed for project resilience.

5.3 Interplay between Engagement and Communication for Resilience and Sustainability

5.3.1. Adaptive Collaboration with Project Disruptions

Stakeholder communication and participation increasingly converge as adaptive collaboration processes during disruptions become crucial in achieving resilient outcomes. Bernat et al. (2023) illustrated how digital collaboration tools enabled real-time coordination of teams during crises such as pandemic lockdowns. Song et al. (2025) offered that stakeholder participatory risk planning led to faster recovery and context-sensitive responses to disruptions. Olatinwo et al. (2025) also observed that those projects with an open communication line with stakeholders were better placed to adjust timelines and redistribute resources when unforeseen delays occur. Monwabisi et al. (2024) reiterated that if the stakeholders were considered partners in the disruption response, resilience increased and trust was maintained. Such observations indicate that participation and communication cannot be siloed but rather mutually reinforcing, particularly in uncertain periods.

5.3.2. Establishing Trust and Long-Term Stakeholder Relationship

Trust emerges both as the outcome of effective stakeholder interaction and as the condition for sustaining collaboration. Frequent and transparent communication fosters accountability and longer-term relationships (Akintelu

et al., 2023; Abdul-Fatawu et al., 2024), while culturally responsive dialogue enhances resilience by reducing resistance and strengthening local ownership (Aasen & Klakegg, 2023; Ebeh et al., 2024). Early engagement further builds credibility and encourages stakeholders to invest in project success (Bal et al., 2013; Tor et al., 2025). Beyond these immediate benefits, trust serves as a systemic mechanism that strengthens risk-sharing, supports shared ownership of sustainability objectives, and institutionalises governance structures (Kaya, 2025; Bernat et al., 2023; Li, 2024; Mensah & Owusu-Manu, 2021). In this way, trust transforms fragmented exchanges into cooperative strategies, embedding sustainability and resilience across planning, construction, and post-construction stages.

5.3.3. Creating Shared Sustainability and Resilience Goals

Communication and engagement align stakeholders on shared sustainability and resilience goals by fostering spaces for co-creation and consensus. Participatory workshops and forums encourage diverse actors to set environmental and social targets collectively, which strengthens accountability and ownership (Kaya, 2025; Abdul-Fatawu et al., 2024). Digital platforms and knowledge-sharing forums further enable agreement on resource optimisation and transparent indicators, while inclusive approaches ensure that underrepresented voices shape sustainability norms (Bernat et al., 2023; Obed Ebeh et al., 2024). Co-designed resilience measures have also been shown to gain greater traction on complex projects, enhancing both operational continuity and ecological adaptability (Song et al., 2025; Li, 2024). By transforming individual perspectives into jointly defined commitments, shared goals maintain responsiveness to climate risks, supply chain disruptions, and social conflict, embedding sustainability and resilience as core values in construction governance.

5.3.4. Incorporating Stakeholder Feedback into Mitigating Risk

Incorporating stakeholder feedback enhances proactive risk management and embeds resilience in project governance. Continuous feedback has been shown to refine risk matrices, integrate new environmental threats, and prompt rapid hazard mitigation planning (Song et al., 2025; Abdul-Fatawu et al., 2024). Digital innovations such as dashboards and blockchain systems allow real-time monitoring, ensuring early detection of risks and timely corrective action (Bahji, 2024; Pandey et al., 2023). Institutionalised processes further reduce the likelihood of conflict escalation by providing structured channels for dialogue and accountability (Li, 2024). Beyond immediate corrections, feedback also sustains long-term adaptive capacity by improving transparency, traceability, and collaborative learning (Monwabisi et al., 2024; Kaya, 2025). By converting stakeholder opinions into actionable strategies, feedback strengthens institutional responsibility and ensures that sustainability and resilience targets remain aligned with evolving project conditions.

5.3.5. Maintaining Long-Term Resilience in Projects with the Help of Knowledge Transfer Mechanisms

Constant communication and structured engagement sustain experiential knowledge sharing across project phases, ensuring that lessons are preserved and reused in future initiatives. Post-project reviews, mentorship schemes, and community participation have been shown to capture both technical and local insights, thereby improving documentation and guiding subsequent projects (Mensah & Owusu-Manu, 2021; Akintelu et al., 2023; Ebeh et al., 2024). Standardised language and institutionalised procedures also prevent knowledge loss during staff turnover or project handover (Handford, 2014; Tor et al., 2025). Beyond these immediate practices, formal repositories, digital platforms, and continuous sharing embed institutional memory that supports the replication of effective sustainability and resilience measures (Kaya, 2025; Obed Ebeh et al., 2024). Such mechanisms not only facilitate the diffusion of new green technologies and adaptive governance models but also strengthen environmental, social, and governance competencies across project teams (Song et al., 2025; Eyiah-Botwe et al., 2016; Adebayo et al., 2024). Through systematic knowledge transfer, construction projects enhance responsiveness to disruption and embed sustainability and resilience as enduring principles in governance and practice (Monwabisi et al., 2024).

5.3.6. Framework for Stakeholder Engagement and Communication in Driving Sustainability and Resilience in Construction Projects

Figure 5 below presents an integrated framework illustrating how stakeholder engagement and communication practices collectively drive sustainability and resilience in construction projects. The framework positions stakeholder engagement and communication as two interdependent pillars under a stakeholder-centred approach. Engagement focuses on inclusion, participation, and co-decision-making, while communication ensures transparency, feedback, and coordination. Their interaction at the centre promotes adaptive collaboration, trust, and shared sustainability goals,

which lead to sustainable and resilient construction outcomes through inclusive governance and long-term adaptability.

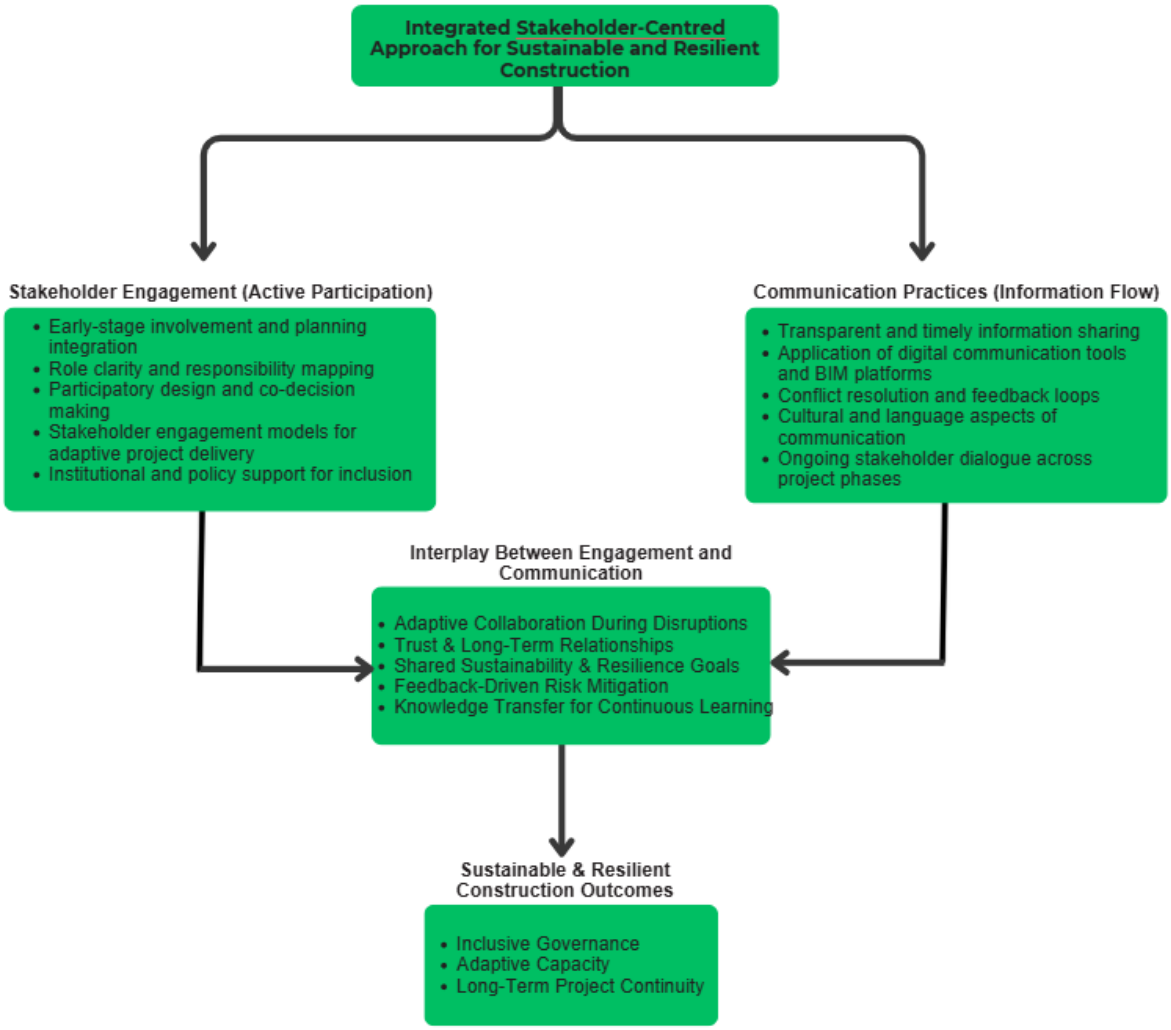

Figure 5: Framework linking stakeholder engagement and communication to sustainability and resilience

6. Conclusion

The review in this study has outlined the ways that participatory involvement and communication practices drive construction project sustainability and resilience. Drawing upon 27 peer-reviewed articles, it is evident that the combination of participatory involvement and deliberate communication encourages flexibility, trust, and collaborative decision-making. Strategies for engagement, such as encouraging early participation, explicit responsibilities, and co-creation, are facilitated by open and continuous communication practices. These approaches not only support better project execution but also introduce resilience through participatory governance and long-term support of stakeholders. Over the past decade, practices have transformed from one-way communication to proactive, multi-stakeholder interaction, particularly for innovation- and community-involvement-hungry projects. This transformation is a paradigm shift in construction project conceptualisation and execution. Although considerable progress has been made, there is still variation in the quality of engagement and contextual responsiveness. Together, the findings emphasise the growing relevance of stakeholder-centred strategies in generating sustainable and resilient project outcomes for the construction industry.

6.1. Theoretical Implications and Recommendations for Further Research

The review advances theoretical progress by emphasising the mutually dependent contributions of communication and stakeholder interaction to sustainable construction. The traditional paradigms have been inclined to view these roles in separation; the evidence, however, suggests they are complementary. Communication must be viewed not as an administrative tool but as a facilitator of participatory decision-making, knowledge transfer, and adaptive learning. This reconceptualisation requires expansion of current models to incorporate dynamic interaction patterns, particularly in complex and multi-stakeholder project environments.

Future research should examine how different contexts moderate the influence of engagement and communication practices. Cultural variations, regulatory environments, technical readiness, and project types all influence stakeholder relationships. Models that are sensitive to these contextual factors have to be created. Furthermore, some particular groups of stakeholders, such as subcontractors, community members, or vulnerable groups, require tailored approaches. Examining their unique expectations and roles will contribute to a more realistic and equitable stakeholder management theory in sustainable construction.

6.2. Managerial Implications

For construction project managers, incorporating stakeholder participation and communication into formal governance structures is paramount. Project managers must move beyond compliance-based interaction and recognise stakeholders as active producers of success in a project. This means implementing systematic engagement strategies, stakeholder mapping techniques, and digital platforms for feedback and decision monitoring. Communication facilitates all parties being committed to the aims of a project and empowered to report concerns or propose solutions throughout the project cycle.

In addition, building the capability of project teams in engagement and communication is critical. Managers should cultivate cultural intelligence, facilitation, negotiation, and collective planning skills. Co-creation can be achieved by involving stakeholders in planning, design, and monitoring. This raises transparency, trust, and responsibility. By associating such practices with performance measures, the construction industry can institutionalise communication and engagement as core strategies for delivering sustainable projects rather than constraining them as supplementary or discretionary activities.

6.3. Limitations

The research is based on a systematic review of 25 peer-reviewed journals that, while broad, may not cover all practicalities of engagement and communication across global construction environments. Omission of industry reports, technical handbooks, and practitioner expertise may limit the applied richness of findings. Second, the literature under study covers scenarios up to 2025, which may not account for future technology advancements and stakeholder expectations. Variations in methodological quality among sources can further influence the model's generalizability. Follow-up studies employing mixed-method investigations and live-case analysis will help to validate and extend the reported evidence base here.

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