

Key factors influencing construction project resilience in Ethiopia: A systematic literature review

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Abstract

This review looked at how resilience affects project success in Ethiopia's construction industry, finding key factors that help improve infrastructure research and suggesting suitable technical methods for areas with limited resources. A systematic literature search was carried out through Google Scholar and the Publish or Perish software. The search and screening process adhered to PRISMA 2020 guidelines. A total of 1,537 articles were found, 547 in category one and 990 in category two, and were screened in accordance with the PRISMA 2020 guideline. Ultimately, ten articles were selected for inclusion in the systematic review. From the selected studies, key themes related to project resilience drivers were identified. A significant limitation was that only one Ethiopia-specific study was examined in the final ten, which impacts the ability to interpret the results in the Ethiopian context. As a result, the review highlights a significant gap in the implementation and documentation of project resilience within the Ethiopian construction industry. These factors also pertain to engineering practice in designing, planning, and delivering complex construction systems with uncertainty. There are plenty of opportunities for applying project resilience and its principles in the Ethiopian construction industry. Future research is warranted to achieve a greater understanding of resilience in relation to project success, as well as to identify other contextual factors that influence resilience in the Ethiopian construction sector. Project resilience plays an important role in the successful completion of construction projects.

Keywords: *project resilience, construction, Ethiopia, PRISMA*

Article History:

Received: May 26, 2025

Accepted: June 25, 2025

Revised: June 21, 2025

Published online: July 30, 2025

Suggested Citation:

Desta, K.B. & Msengana, L. (2025). Key factors influencing construction project resilience in Ethiopia: A systematic literature review. *International Journal of Science, Technology, Engineering and Mathematics*, 5(3), 1-21. <https://doi.org/10.53378/ijstem.353228>

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1. Introduction

The Ethiopian construction industry is undergoing tremendous growth; however, it can lag behind in certain projects due to various risks and challenges. The Ethiopian construction industry faces socio-cultural, political (Tekla Bedada, 2023), and environmental issues (Abedini et al., 2014) that need to be tackled to accomplish the projects. To meet the growing infrastructure needs of Ethiopia's population, stakeholders must anticipate and address these challenges. Given these challenges, Ethiopia's construction industry requires a unique management approach that can adapt to unexpected circumstances and reduce disruptions. Therefore, it is crucial to analyze Ethiopia construction sector, prioritizing project resilience and success determinants. Even with the fast-paced growth of the construction industry, Ethiopian construction projects experience delays and cost overruns due to a failure to recover from disruptions (Ayalew et al., 2016). Moreover, Ethiopia's socio-political and economic circumstances hinder the implementation of global frameworks designed to sustain resilience. This void in the implementation of project resilience highlights the necessity to understand how to construct resilience for Ethiopian construction projects.

Failure to take into account the resilience and success drivers within Ethiopia's construction industry can lead to disastrous outcomes (Lv et al., 2023). If recovery or flexibility is not present, for example, it may add time to the project, which could ultimately be costly, both in real terms and in opportunities for growth (Demissew & Abiy, 2023). Furthermore, from an infrastructure perspective, there is overspending, underperformance, or other sociologically naive and unrealistic projects that cannot be completed without grasping the basic principles of project resilience. Considering Ethiopia's rate of development and urbanization, resolving this issue is crucial (UNDP, 2022). Failure to do so will result in further inefficiencies, an increased rate of abandoned contracted projects, and a decrease in trust from investors in the field. Neglecting these issues would impede sustainable development goals, socioeconomic development, and the reduction of poverty and inequality (He et al., 2022).

This research can address the increasing demand for interdisciplinary studies that explore the relationship between civil engineering practice, project systems analysis, and socio-technical resilience frameworks to contribute to the development of infrastructure in emerging economies. Although global research on resilience in construction has been rapidly expanding, there remains limited literature about resilience and success in Ethiopian construction projects (Belay et al., 2021). This literature review looks at the relationship

between resilience and project success, examining resilience characteristics and roles and also address the topic of incomplete construction projects and the poor performance of the sector overall. Additionally, this study includes several important factors related to the Ethiopian construction sector that are relevant outside of academia. The results will assist construction practitioners in understanding what a resilient project is and how it is achieved (Santoro et al., 2020). The study hopes to contribute to the Ethiopian construction industry through the promotion of stakeholder collaboration and knowledge sharing, and construction stakeholders will be able to create standards to improve the chances of success for Ethiopian construction projects.

The research acknowledges the critical role of project resilience in achieving success, focusing on leadership, team culture, organizational structure, risk management, and external environmental factors. By fostering cooperation, creativity, and effective management of uncertainty, the success of projects can be enhanced, ultimately meeting stakeholders' expectations. Hence, this review is important for three audiences: policymakers, practitioners involved in the Ethiopian construction industry, and researchers interested in this specific geographic context within the construction sector. Moreover, the study will help build on the existing body of knowledge in the discipline of project management, specifically addressing the gap in implementing resilience frameworks in the African construction context, particularly Ethiopia. By utilizing engineering management and construction science methodologies, this study will bridge the separation between resilience theory and its practical application in Ethiopia's infrastructure sector.

This study aims to prove the following hypotheses:

H1: Project resilience has a significant impact on project success

H2: High-performance culture has a positive impact on project resilience

H3: Resilient leadership behaviour has a positive impact on project resilience

H4: Resilient organisational structure has a significant impact on project resilience

H5: External environmental factors have a significant impact on project resilience

H6: Risk management practices have a direct effect on project resilience performance

2. Literature Review

2.1 Resilience

Resilience has different definitions and approaches across various fields. According to Wied and Oehmen (2019), definitions of resilience relate to a system's adaptability and absorbability. In contrast, Bruneau et al. (2017) stress the personal, family, societal, or organisational capabilities of anticipating challenges and coping with their effects while still being functional. Oguntona et al. (2022) elaborate further on resilience by describing its dimensions, absorbing, adapting, restoring, and preventing. Gholami et al. (2018) offer a more comprehensive perspective and define resilience as the ability to identify risks, take initiatives to stop or lessen any risks, make performance adjustments through coping mechanisms, restore all systems affected by the disturbance, and remain persistent. In addition, high resilience refers to the number and capacity to act, restore appropriate functions, lessen long-lasting adverse effects, and maximize opportunities. According to Milat et al. (2021), resilience is the integration of preparation and reaction. From their perspectives, resilience emphasises the ability to sense, avoid, adjust, restore, and modify projects in response to unexpected situations.

2.2 Project Resilience

Project resilience is a new concept associated with complex, uncertain projects and adaptability. Projects face uncertainties that can be caused by either environmental changes or internal organisational factors such as poor project management. According to Blay (2017), project readiness for responding to risks beyond control is important. This ensures that the project process can continue smoothly by reducing risk implications at the project level throughout each stage of development (Kanjanasomkid & Cartagena, 2021). Rahi (2019) describes project resilience as an organisation's ability to recognise risk, recover quickly from setbacks, and achieve its original objectives regardless of the circumstances. Engineering resilience, as referred to by Blay (2017), is concerned with how goals can still be achieved within rigid systems or structures, while Kanjanasomkid and Cartagena (2021) focus more on business contexts, survival, and recovery. Project resilience incorporates implications from both engineering resilience and business survival, providing real-world value to infrastructure planners and technical project leaders operating in unpredictable contexts.

2.3 Theoretical Background

This section discusses theories that help in better understanding construction project resilience. The Theory of Resilience, Organisational Behaviour, and Agile Project Management are the core frameworks identified. These concepts lead to approaches that inform adaptable and technically sound methods for managing uncertainty in construction systems, aligning with the journal's mission to facilitate infrastructure resilience.

Resilience Theory. The growing need to address uncertainty regarding future events has considerably increased the body of research on resilience. Instead of relying on accurate forecasts, it requires a qualitative system design capable of absorbing and accommodating future changes (Wied & Oehmen, 2019). Forecasting or building resilience is a way to control corporate uncertainty. Forecasting involves planning, assessing, predicting, and preventing issues before they occur. Resilience, on the other hand, involves monitoring, responding to, and recovering from unplanned disruptions.

Today's dynamic business environments require companies to be resilient to handle uncertainties. Adopting the notion of resilience in Agile Project Management (APM) and Organisational Behaviour Theory can significantly enhance an organisation's adaptability.

Agile Project Management. Agile Project Management focuses on meeting customer needs and performing operations with the flexibility to adjust to changes in the business environment (Gölgeci et al., 2020). It accommodates iterative cycles and self-management, allowing individual members to manage certain functions within the team (Amajuoyi et al., 2024). The foundational principles of Agile Project Management include continuous improvement through planning, implementation, and evaluation. Self-organising teams participate actively in decision-making before receiving orders from higher authorities. This flexibility allows Agile Project Management to meet constantly changing customer requirements, ideal for environments with dynamic goals and objectives. This feedback-driven model suits engineering practices and fosters adaptability in unpredictable infrastructure and technology contexts.

Organisational Behaviour Theory. Organisational Behaviour Theory is derived from studying individual and group performance, behaviour, attitudes, and motivation in the workplace (Saiful Hakiki et al., 2023). It examines employee behaviour with the aim of improving organisational performance and employee well-being, focusing on individual characteristics and external factors that drive organisational action. Aligning individual and

organisational goals helps reduce workplace conflict. Informal hierarchies in teams support effective team performance, making understanding these hierarchies essential. Globalisation, technological advancement, and societal changes push organisations to adapt (Sunarsi, 2020). Research suggests individuals naturally prefer team-based structures to achieve shared objectives, which promotes communication, collaboration, and efficiency (Christy, 2016). The theory's focus on behaviour, adaptation, and team dynamics provides insights for enhancing the collaborative efficiency of engineering and construction teams. Moreover, to remain competitive, organisations must be flexible and sustain momentum despite environmental shocks, such as emerging technologies or globalisation effects.

Despite these advantages, some organisations struggle to implement change due to cultural and structural barriers that hinder the adoption of resilience strategies (Banahene et al., 2014). Understanding both individual and team dynamics is crucial for enhancing collaboration and overall organisational performance.

2.3. Project Success and Resilience

One of the main issues in project management is defining what constitutes project success. While there is no universal definition or criteria for success, academics propose both qualitative and quantitative success criteria, depending on project aspects, phases, or stakeholders. A common indicator of success includes efficiency and effectiveness; efficiency is converting inputs into outputs while effectiveness is doing the right things.

In conventional project management, success is often defined by meeting quality, time, and cost targets (Tesfaye et al., 2017). Accordingly, quality management involves managing processes and customer requirements. By the early 2000s, experts agreed that project success should also be measured by how well project objectives align with broader business goals within an organisational strategy (PMI et al., 2017). Brower and Mahajan (2013), citing stakeholder theory, emphasise the need to balance stakeholder interests and power.

The Iron Triangle illustrates the interaction between time, cost, and quality (Tesfaye et al., 2017), which is a proactive approach to quality management involving stakeholder considerations. Brower and Mahajan (2013) identify quality, cost, time, customer satisfaction, and safety as key success factors for organisations. On the other hand, Gichuhi (2021) asserts that resilience is a growing factor of success in a world filled with challenges, competition, and rapid technological change. Resilience has become essential for ensuring long-term operational

capacity, especially in construction projects affected by environmental volatility (Yang & Cheng, 2020). Resilient organisations are more effective in finance, operations, and supply chains, which contributes to overall project success (Cottam et al., 2019).

This research assesses project success based on the classical triangle of time, cost, and quality, and also considers modern indicators such as stakeholder satisfaction and safety. Balancing traditional and emerging success criteria is crucial for evaluating performance in engineering-based and outcome-focused projects.

3. Methods

A systematic review was performed based on the PRISMA 2020 requirements to ensure a clear, repeatable, and scientific method of identifying studies about project resilience and success. It then sought to examine the appropriateness of resilience strategies in construction projects, with special focus on Ethiopia.

3.1 Eligibility

The inclusion criteria were designed to cover studies that specifically dealt with resilience strategies in construction projects. Such studies had to evaluate these strategies, compare them with other techniques, and analyse their overall effectiveness. Due to the lack of previous resilience research related to the Ethiopian construction sector prior to 2018, this review focused on papers published between 2018 and 2022. It included only papers written in English and dated between 2018 and 2024 to ensure the inclusion of the most recent literature reflecting the latest knowledge and practices in project resilience. Both quantitative and qualitative studies conducted across a range of settings were included, as long as they met the other inclusion criteria.

The review excluded studies that did not meet the inclusion criteria. These included articles published before 2018, non-English language papers, review papers, and books. Only primary research studies, those that presented original data, were included. Due to the exclusion criteria, the narrative review focuses on empirical research, which provides a more precise understanding of project resilience in construction projects.

3.2 Search Strategy

To identify relevant studies, a comprehensive search strategy was implemented using Google Scholar and Publish or Perish software. The search was carried out in two stages to capture both global and Ethiopian perspectives:

Global Studies (Category 1): Keywords such as “project resilience,” “impact,” and “construction success” were used to find research investigating how resilience strategies are applied in construction projects across different contexts. This yielded numerous results, which were then narrowed down to those that met the criteria.

Ethiopian Studies (Category 2): The same procedure was followed for Ethiopian studies using terms such as “resilience,” “construction,” “project success,” and “Ethiopia.” This targeted search aimed to identify articles that examined resilience within Ethiopian construction projects.

Initially, the database searches produced a large number of studies, 547 records from Category 1 and 990 records from Category 2. After removing duplicates, further screening was completed based on title, abstract, and relevance to the research question.

3.3 Study Selection

The study selection process was conducted systematically to ensure that the results were precise and reproducible. The screening process had several stages for both global (Category 1) and Ethiopian (Category 2) studies:

Category 1: Global Studies. The global study search identified 547 records. These were sourced using specific search terms like “project resilience,” “impact,” and “construction success.” All records were screened for relevance to the research question, and duplicates were removed, resulting in 538 unique records. The next step was title and abstract screening using predefined criteria to assess relevance to the main research objective. To refine the selection and minimize irrelevant studies, delimiters and Boolean operators were used. After this screening, 80 articles were retained for full-text review. The full-text review ensured that no relevant studies were overlooked. After the final selection process, 9 papers were selected from Category 1.

Category 2: Ethiopian Studies. The search for Ethiopian studies focused on resilience in the context of construction projects in Ethiopia. Initially, 990 texts were identified using keywords such as “resilience,” “construction,” “project success,” and “Ethiopia.” After

deduplication, 988 unique articles remained. Records were screened to remove studies that were not situated in the Ethiopian national context or were not directly relevant to the research question. This step ensured that only those studies aligned with the theme of the research were included. At the conclusion of the article review process, 11 articles were selected for full-text review. After reviewing these texts in full, it was found that only one study met the inclusion criteria for further detailed analysis and synthesis.

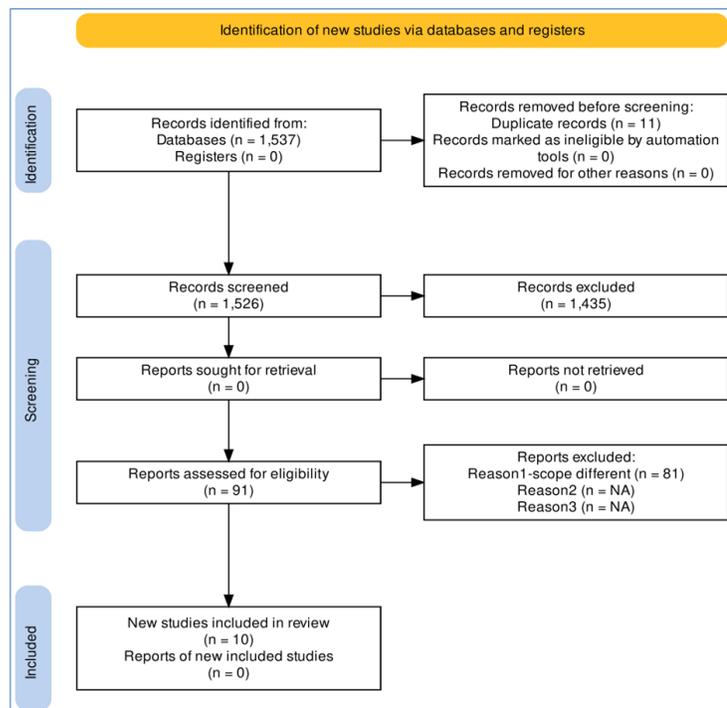
In total, 10 studies were selected for this systematic review: 9 global studies (Category 1) and 1 Ethiopian study (Category 2). These studies were then examined in detail to establish their contribution to understanding resilience effectiveness in construction projects. It is acknowledged that this review did not include a formal quality assessment of the studies, which is a limitation.

3.4 Final Study Selection

After two screening stages, 10 studies were selected for detailed review: 9 from Category 1 (global) and 1 from Category 2 (Ethiopian context). These studies were reviewed in depth to assess their findings and draw conclusions on various aspects of project resilience and success. This structured process reflects the standard of rigour expected in applied research and engineering practice. It also enhances credibility when introducing resilience within theoretical models or frameworks for infrastructure and construction systems.

Figure 1

PRISMA 2020 Flow Diagram



Source: PRISMA 2020 Guidelines

3.5 PRISMA 2020 Flow Diagram

The PRISMA 2020 flow diagram as shown in figure 1 presents a summary of the systematic review process, including the number of records identified, screened, and included for analysis.

4. Results

Through an examination of recent studies, this review identifies key drivers of resilience and their implications for project management:

Zaman (2021): This study explores project leaders' post-failure behaviours, focusing on resilience, self-esteem, and self-efficacy in high-tech start-ups in Pakistan. The findings suggest that a project leader's resilience directly influences their ability to manage setbacks, thereby enhancing project success. Identified resilience drivers include self-esteem and self-efficacy in project leaders. However, the implications of these findings may not apply to Ethiopia due to differences in industry context, cultural setting, and local conditions.

Yunpeng (2023): Investigating mega-construction projects under China's Belt and Road Initiative, this research emphasises the roles of team resilience, member voice, and paternalistic leadership. It highlights the motivating operational environment under capable leadership as a contributor to success in cross-functional projects. Yunpeng (2023) specifically discusses the impact of organisational structure (through leadership styles) on the implementation of large-scale construction projects and how it relates to the external environment. Identified resilience drivers include paternalistic leadership styles, organisational structure, and team resilience. These drivers may function differently in Ethiopia, depending on local leadership styles, team dynamics, and organisational structures.

Wen et al. (2023): Investigating resilience-related issues in projects in Malaysia and internationally, this study ranks factors identified from respondents using the Delphi methodology. Key aspects include leadership, project agility, and emotional intelligence, which significantly aid in addressing project challenges. Identified resilience drivers are leadership, project agility, interpersonal communication, risk control, and emotional competence. However, their relative importance may differ in Ethiopia, given the distinct industry practices and cultural context.

Prasetyo Lauli (2021): This study analyses the relationship between group potency, interpersonal trust, and resilience among project teams in the construction industry. The results

show that interpersonal relations founded on trust significantly strengthen resilience capacities. Additionally, Prasetyo et al. (2021) examine how organisations adjust to surges or lulls in external activity (e.g., market volatility) and the implications for megaproject resilience. Identified resilience drivers include interpersonal trust and group potency. Their impact in Ethiopia may vary based on team dynamics and organisational culture.

Kanjanasomkid et al. (2022): This study investigates project resilience practices during crises and asserts a strong association between effective resilience strategies, such as contingency planning and risk monitoring, and project success. Identified resilience drivers are contingency planning, risk monitoring, flexibility, empowerment, and effective communication. The implementation and impact of these strategies in Ethiopia may differ based on the availability of local resources and communication norms.

He et al. (2022): This study focuses on construction project resilience in China, evaluating the effect of employee behaviours on resilience. It identifies significant cultural and collaborative factors that contribute to a resilient project environment. Identified resilience drivers are management team cohesiveness, project culture, and collaboration effectiveness. However, their impact may differ in Ethiopia due to contextual differences in workplace norms, teamwork, and collaboration practices.

Fernandes (2023): This research demonstrates the influence of team resilience on project achievement within information systems and underscores the necessity of resilience across all project types. The primary resilience driver identified is team resilience. However, it is unclear to what extent these results can be generalised to the Ethiopian context, where organisational culture and sector-specific issues may differ.

Prasetyo et al. (2021): This study examines the relationship between leadership agility, organisational adaptability, and project resilience in Indonesian megaprojects. It highlights how leaders' adaptability fosters resilience. Identified resilience drivers are leadership agility and technology adoption. Technological readiness and leadership style differences may affect their effectiveness in Ethiopia.

Belay (2021): In a study of construction projects in Ethiopia, Belay (2021) conducted a case study on critical success factors and found that financial resources, contractor competency, and clearly defined project objectives are essential for project sustainability. External environmental factors, such as the political environment, are also significant in

determining organisational and project success. Identified resilience drivers are financial capacity, contractor competency, external environmental factors, and clarity of project goals.

Dwidienawati (2023): This study investigates the impact of transformational leadership on individual and team resilience, arguing that effective leadership enhances project resilience. Identified resilience drivers include transformational leadership, individual team members' resilience, and team resilience. However, differences in leadership style, culture, and project context likely limit the transferability of these findings to Ethiopian construction contexts.

Based on these studies, several common themes and resilience drivers emerge:

Leadership quality and adaptability (including transformational and agile leadership) are consistently identified as key factors supporting a resilient response across various contexts.

Team-related resilience factors, such as interpersonal trust, team cohesion, and organisational culture, are crucial under crisis or adverse conditions.

Strategic risk management practices, including contingency planning, proactive risk interaction, and strategic flexibility, are essential resilience drivers in uncertain or unplanned situations.

Organisational structure and environmental awareness, including management unity and responsiveness to external environments, significantly influence resilience and performance.

Communication and emotional intelligence support resilience by enhancing coordination and emotional regulation within project teams.

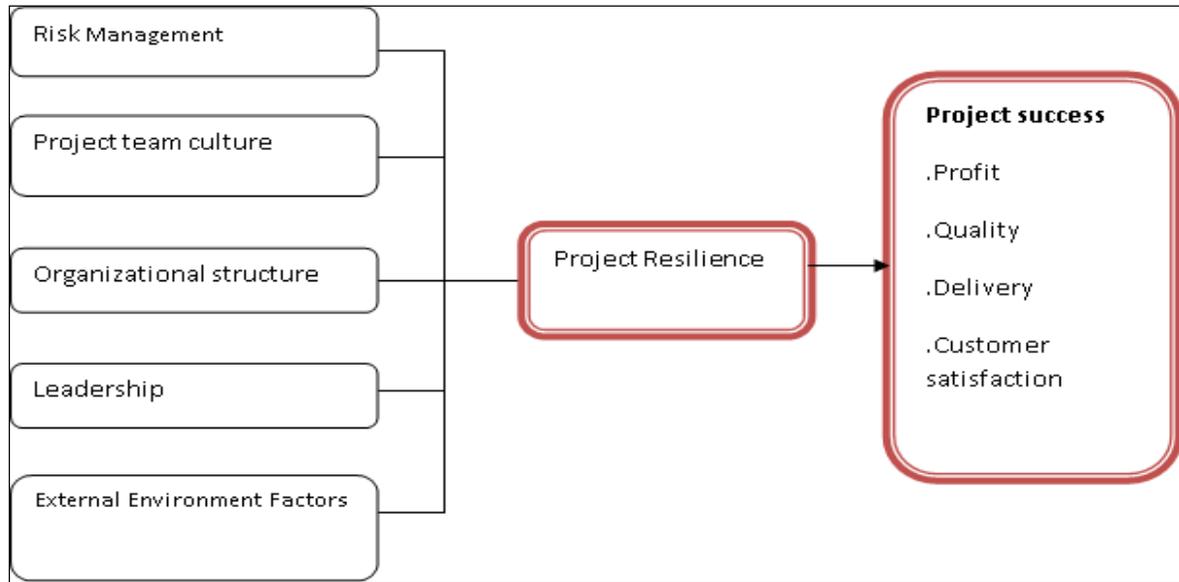
The frequently identified drivers, leadership, team culture, risk management, organisational structure, and the external environment, have important implications for understanding the complexities of resilience. They also offer a foundation for future research and practical applications in construction project management. In the Ethiopian context, there is a pressing need to examine how these drivers can be fostered, adapted, or hindered within the local socio-economic and institutional environment to develop more effective resilience strategies.

The conceptual framework defines the structure for identifying core components relevant to project resilience. Five determinants (independent variables expected to positively influence project resilience and thus project success) are presented in figure 2. These include project team culture, leadership, organisational structure, external environment, and risk

management. The outcome variables related to project success include quality, cost, time, safety, and customer satisfaction. This framework determines which aspects of project resilience are most applicable in the Ethiopian construction context to recommend the most influential resilience-enabling practices.

Figure 2

Conceptual framework



Source: Author's own conceptualisation

5. Discussion

H1: Project resilience has a significant impact on project success

Understanding resilience in the context of project success, as demonstrated in Lv et al. (2023), supports Hypothesis H1, which asserts that resilience positively impacts construction projects. The review found that projects whose teams exhibited resilient behaviours, such as adaptability and strong leadership, tended to achieve greater success. However, it is important to note that much of the literature supporting this synthesis is based on studies conducted outside of Ethiopia and should therefore be tested within the Ethiopian context. While Lv et al. (2023) discuss resilience in general terms, their findings support the notion that focusing on specific resilience strategies could improve the outcomes of Ethiopian construction projects. This is particularly significant in Ethiopia, where construction projects face challenges such as political instability, resource limitations, and economic volatility.

The research findings provide insights into how resilience strategies can be tailored to the Ethiopian context, which differs substantially from other regions. Considering Ethiopia's unique challenges, it is vital to test whether the same resilience factors are relevant locally. Implementing resilience strategies, such as enhancing adaptability to changing circumstances, could be essential for improving project success in Ethiopia. These findings also contribute to enhancing engineering project delivery, construction execution, and collaborative systems.

H2: High-performance culture has a positive impact on project resilience

This study focuses on the influence of high-performance team cultures on project resilience. Zaman et al. (2021) and He et al. (2022) identify a clear link between high-performing team cultures and increased resilience, supporting H2. However, most of these studies were conducted in contexts outside Ethiopia, necessitating additional research to determine whether these findings hold true locally. Although these studies support H2, the extent to which these conclusions apply to Ethiopia remains uncertain, highlighting a gap for more Ethiopia-centric studies. The research suggests that strong team cultures enhance project resilience by fostering environments conducive to overcoming challenges. While teamwork and resilience are generally considered universal concepts, testing their applicability in Ethiopia is essential.

In the Ethiopian construction context, where issues like workforce skill gaps and high attrition rates are prevalent, investing in team performance and culture is critical. Enhancing communication, encouraging responsibility, and improving conflict management may strengthen resilience among Ethiopian construction teams. Resilient team cultures also benefit other areas such as engineering process execution, construction activity management, and collaborative system administration.

H3: Resilient leadership behaviour has a positive impact on project resilience

This study also examines the role of leadership in building resilience. Eyerusalem (2021) highlights the importance of leadership in cultivating a resilient organisational culture, aligning with H3. However, as with other hypotheses, the majority of literature is drawn from contexts outside Ethiopia. Regional leadership differences may affect how applicable these findings are locally.

Studies from other regions suggest that effective leadership behaviours, such as coping under pressure and strategic decision-making, can guide projects through adversity. This insight is particularly relevant to Ethiopia's construction industry, where leaders contend with political instability, economic pressures, and limited resources. To improve leadership resilience in Ethiopian construction projects, it is essential to invest in training programs that promote behaviours such as initiative-taking, decision-making, problem-solving, and team motivation. These qualities are necessary for leaders to manage complex project environments effectively.

H4: Resilient organisational structure has a significant impact on project resilience.

This study supports H4, demonstrating that organisational structure contributes to project resilience. Küffner et al. (2022) argue that flexible organisational structures are essential for overcoming challenges in construction projects. While their findings are compelling, they are drawn from contexts outside Ethiopia, highlighting the need for further testing within the Ethiopian business and regulatory environment.

Organisational flexibility is particularly crucial in Ethiopia, where projects must adapt to fluctuating political conditions and resource constraints. Ethiopian construction projects often operate under rigid frameworks dictated by state policies and international contracts. Resilience could be improved by adopting decentralised structures that empower local leaders and enable faster decision-making. This recommendation aligns with literature on project management frameworks, system resilience, and adaptability in engineering.

H5: External environmental factors have a significant impact on project resilience

Recognising the influence of external political and economic conditions is vital to enhancing the resilience of Ethiopian construction projects. Belay et al. (2021) and Tessema et al. (2022) underscore the importance of considering such external factors in resilience planning, supporting H5.

Although most supporting literature originates outside Ethiopia, these findings remain highly relevant given Ethiopia's unstable political landscape and exposure to foreign market fluctuations. Environmental scanning and risk identification should be incorporated into project planning to improve resilience. These practices also support the development of context-sensitive infrastructure and environmental governance systems.

H6: Risk management practices have a direct effect on project resilience performance

While earlier work by Tadesse Ayalew and Zakaria Dakhli (2016) explored vulnerability reduction, most of the literature on risk management and resilience remains focused outside Ethiopia. Thus, H6 should be empirically tested in the Ethiopian context. There is a notable gap in understanding how Ethiopia's construction industry contributes to risk management and resilience. This study proposes that Ethiopian construction projects should shift from reactive risk responses to proactive resilience building. Strategies such as contingency planning, resource diversification, and collaborative problem-solving can enhance resilience in the face of recurring disruptions. Focusing on predictive, preventative, and data-driven risk management supports technical approaches in infrastructure development and engineering systems.

While the reviewed studies span various cultures, their insights remain relevant for Ethiopia in a globalised context. However, the scarcity of Ethiopia-focused studies limits definitive conclusions, underlining the need for more localised research. The findings indicate that leadership, team culture, organisational structure, environmental awareness, and risk management are critical for project resilience and success. Integrating these factors into Ethiopian construction projects will enhance their capacity to withstand social, political, economic, and environmental shocks. These insights position resilience not merely as a management concern but as a complex technical challenge requiring new engineering practices and evidence-based governance. Policymakers should prioritise national resilience strategies and capacity building, while industry leaders embed resilience practices in day-to-day operations.

This review identifies several limitations. Primarily, most of the referenced studies originate from non-Ethiopian contexts (e.g., Pakistan, China, Malaysia), limiting their direct applicability. Furthermore, the review did not explicitly assess the methodological quality of the included studies. There is a substantial research gap regarding resilience in Ethiopian construction, with limited local research addressing the unique challenges of the sector. Global literature tends to overlook the specific socio-political and economic conditions in Ethiopia, where leadership issues, organisational rigidity, and poor risk management remain prevalent. Future studies should incorporate grey literature, government reports, industry publications,

and non-English sources to deepen the understanding of resilience in Ethiopia. More context-specific approaches are needed to adapt existing resilience models for Ethiopian conditions. Quality assessments of future studies will further strengthen the reliability of the findings.

6. Conclusion and Recommendations

This study identifies key drivers of resilience, leadership, team culture, organisational structure, external environment, and risk management, and emphasises their relevance to the Ethiopian construction sector. The conceptual framework developed from this systematic review offers a foundation for future empirical work tailored to Ethiopia.

Improving project outcomes in Ethiopia requires multidimensional resilience strategies that are responsive to local barriers. These findings provide valuable insights for infrastructure engineering, project systems analysis, and management science. Grounded in current literature, the framework also highlights gaps requiring further exploration.

To enhance resilience, strategies should focus on adaptive leadership, team culture development, organisational flexibility, and proactive risk management. Given Ethiopia's complex environment, global strategies must be localised to ensure relevance and effectiveness. Ultimately, tailored resilience strategies will enhance Ethiopia's construction capacity, improve project success, and promote sustainable sectoral growth. These findings bridge resilience theory with engineering practice and offer practical guidance for STEM professionals, engineers, project managers, and system designers, working in volatile settings.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was not supported by any funding.

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