**International Journal of Emerging Research and Review**
Homepage : https://ijoerar.net/index.php/ijoerar
p-ISSN : 3024-8825; e-ISSN : 3021-8950




# Strategic Analysis of Change Management in Complex Infrastructure Projects: A Systematic Literature Review

**I Gusti Ngurah Putrawan[1*], I Ketut Setia Sapta[1], I Nengah Aristana[1], Gede Cahyadi Putra[1], Vony Surya Chandra[1], Choirul Nikmah[2]**
[1]Universitas Mahasaraswati Denpasar,Bali, Indonesia
[2]University of Science and Technology, Pingtung, Taiwan

**DOI:** https://doi.org/10.56707/ijoerar.v3i3.139

**Sections Info**

***Article history:***
Submitted: July 17, 2025
Final Revised: July 24, 2025
Accepted: July 25, 2025
Published: July 28, 2025

***Keywords:***
Strategic change management
Complex infrastructure projects
Digitalisation
Systematic literature review
Building Information Modelling (BIM)

**ABSTRACT**

***Objective:*** *This study systematically reviews strategic change management in complex infrastructure projects involving multiple stakeholders, advanced technologies, and multidimensional risks.* ***Method:*** *Using a Systematic Literature Review (SLR) approach on scientific articles published between 2019 and 2024, this research identifies adaptive strategies applied to address change challenges, including the integration of digital technologies (BIM, IoT, AI), transformational and participative leadership approaches.* ***Results:*** *Findings indicate that digitalisation and sustainability have become the main pillars of modern infrastructure project management, while social aspects such as organisational justice and social procurement are increasingly prioritised. Furthermore, managing project complexity requires a multidisciplinary approach that integrates advanced technologies, adaptive organisational capabilities, and collaborative leadership to minimise resistance to change.* ***Novelty:*** *This study contributes novelty by mapping the literature trends on change management strategies in complex infrastructure projects and offering practical implications for project managers and policymakers in formulating effective and sustainable change strategies in the era of digital transformation and global uncertainty.*

## INTRODUCTION

Complex infrastructure projects are large-scale initiatives that often involve multiple stakeholders, advanced technology, high investment, and long-term impacts on society, economy, and environment (Wang et al., 2022) . In the implementation process, this type of project is inseparable from changes that arise due to internal and external dynamics, such as policy changes, technological developments, market fluctuations, and global crises such as the COVID-19 pandemic (Errida & Lotfi, 2021).

Large infrastructure projects are massive-scale entities with high investment, organizational complexity, and extensive and long-term social, economic, and environmental impacts. Research (Sheng et al., 2024) emphasizes that mega infrastructure requires management of system complexity ranging from initial decision-making, financing models, schedule coordination, technological innovation, to sustainability strategies. In large-scale infrastructure projects, the involvement of various stakeholders is central. Meta-analysis studies show that stakeholder involvement throughout the phase is crucial to control time, cost, and quality. Failure to manage stakeholder conflicts and perceptions at various stages can pose significant risks to project success (Najib et al., 2022) . Large-scale financing often involves ESG (Environmental, Social, Governance) models. A recent infrastructure ESG review noted that current investments and environmental impacts in the design and operational stages (Najib et al., 2022).

An ESG focus helps increase the attractiveness of projects to investors and ensures sustainability. Change management is a fundamental factor in the success of complex infrastructure projects (Thi Cao & Ba Le, 2024) . Changes that are not managed strategically can lead to delays, cost overruns, or even project failure, communicative leadership, and technical training to control administrative and technical changes. Review Digitalization in Infrastructure Construction Project (Alsofiani, 2024) concluded that resistance and lack of training were the main obstacles, while education and active involvement of stakeholders significantly increased readiness and acceptance of change.

The study by (Jennifer Whyte et al., 2024) presents a *digital twin- based* interface management framework model , which allows visualization and mitigation of the impact of changes between subsystems in *real- time* . External pressures (regulation, market, technology) and internal factors (organizational structure and culture) drive the need for adaptive strategies and dynamic control systems that enable rapid response and data-driven decision making. The article by (Santos et al., 2024) introduces a simulation and optimization framework embedded in a *digital twin architecture* ( *Manufacturing context* , but relevant for complex infrastructure projects). Therefore, a deep understanding of change management strategies in the context of complex infrastructure is not only relevant for academics, but also necessary for practitioners and project executors. According to (Qiu et al., 2025) emphasizes the value of *digital twins* to strengthen *resilience decision* making and cross-disciplinary collaboration in large infrastructure projects. However, the literature that systematically examines change management strategies in complex infrastructure projects is still scattered and not well integrated (Hidayat & Salahudin, 2021) . This raises the need for a systematic literature review study (*Systematic Literature Review/SLR*) to identify, classify, and synthesize important findings from previous studies.

This study aims to systematically examine change management strategies in complex infrastructure projects through a review of the latest scientific literature. The main focus is directed at identifying and classifying strategies used in the context of large-scale projects, while analyzing the main challenges that often arise in their implementation. In addition, this study also explores the framework and strategic approaches that have been applied globally in project change management. The results of this study are expected to be able to compile a comprehensive literature map and direct the agenda for further research in the field of complex infrastructure project change management.

From a theoretical perspective, this study contributes to the development of academic literature on change management, particularly in the context of multidimensional and complex infrastructure projects. With a *systematic approach Literature Review* (SLR), this study develops a knowledge framework that can be used as a basis for further empirical studies. Practically, the results of this study provide benefits for project managers, consultants, and policy makers by providing evidence-based strategic references. These findings are adaptive, structured, and contextual, to improve the success of large-scale infrastructure projects. This research focuses on scientific articles discussing strategic change management in the context of complex infrastructure projects published in the period 2013-2024. Literature sources include scientific journals, conference proceedings,

and selected research reports available in reputable *databases Scopus, ScienceDirect*, and *Google Scholar*. This research does not include studies that only discuss daily operational changes or non-infrastructure projects such as SMEs and start- ups, except for certain comparative purposes.

The literature search strategy in this study was carried out systematically to identify and collect scientific articles relevant to the topic of change management in complex infrastructure projects. The search was conducted on several leading scientific databases, namely: (a) *Scopus*, (b) *Web of Science*, (c) *ScienceDirect*, and (d) *Google Scholar*. Keywords can be used in searches arranged based on Boolean combinations and developed through *snowballing* techniques from relevant articles that have been found. These keywords include: (a) *Change Management and Infrastructure Project*, (b) *Strategic Change and Complex Projects*, (c) *Organizational Change and Infrastructure Management*, and (d) *Project Transformation and Infrastructure Complexity*. The publication period set is 2019-2024 to obtain the latest and relevant studies to current developments. The language used is limited to English to maintain uniformity in the analysis.

Many systematic studies have concluded that despite the proposal of various change management systems, models, or frameworks for infrastructure projects, their implementation in real-world practice remains very limited. Studies highlight the lack of research that applies the proposed change models in practice, including their impact on project performance. There is an explicit lack in the literature of methodological approaches (such as longitudinal or experimental research designs) that deepen the understanding of actual change management practices. Most studies are descriptive or based on single-variable observations, without examining complex cause-and-effect relationships. While agile management and adaptive change management are recognized as important trends, the literature remains limited to agile cases in construction projects, particularly complex infrastructure. An explicit gap is identified: the number of studies is very small and further exploration is needed on how agile can be effectively implemented in large infrastructure projects. In complex infrastructure projects, change often poses significant risks at the interfaces between technical, organizational, and contractual subsystems. Early literature (on digital twins and interface management) suggests the need for further research on how to identify and manage changes at interfaces between subsystems using technologies such as digital twins, semantic enrichment, NLP, and network analysis. This marks an explicit gap where systematic studies have not yet explored the interdependencies of these interfaces. Several articles suggest that studies of infrastructure project change management have not sufficiently adopted a systems thinking approach and organizational flexibility, even though project complexity and uncertainty require dynamic and adaptive thinking. Gaps occur in the areas of systems integration and flexibility to external environmental changes in infrastructure management. Still, little research explicitly considers the influence of cultural context, institutional structure, and governance (including leadership styles such as top-down versus bottom-up) on the effectiveness of change management in large infrastructure projects. This gap is significant because many giant infrastructure projects involve actors across different countries and institutions.

Inclusion and exclusion criteria for selecting relevant and high-quality articles. The criteria applied are as follows: inclusion criteria consist of (1) articles in English, (2) published between 2019 – 2024, (3) studies focused on change management, (4) studies focused on infrastructure projects, and (5) articles from indexed / peer journals. reviewed. Meanwhile, the exclusion criteria consisted of (1) non-English articles, (2) published before 2019, (3) studies not relevant to change management, (4) studies outside the context of infrastructure projects, and (5) pini articles, editorials, or short reports. The selection process is carried out in several stages, referring to the (PRISMA *Preferred) protocol).* This systematic review and meta-analysis reports several stages, including the reporting items for Systematic Reviews and Meta-Analyses, which include*:* (a) Identification. Collecting all articles from various databases using predetermined keywords, (b) Screening. Removing duplicates and filtering based on title and abstract, (c) Eligibility. Assessing the full text of articles to ensure compliance with the inclusion criteria, and (d) Final Inclusion. Eligible articles are included in the final analysis.

The collected data were analyzed using a light qualitative and quantitative approach. Some of the techniques used include: (a) Thematic Coding Coding: to identify key themes in change management in infrastructure projects, (b) Classification based on year and study location. to see temporal and geographical trends, (c) Narrative analysis. To summarize findings and compare between studies, and (d) SLR Matrix. Used to group articles based on study focus, approach, key variables, and key findings. The analysis was done manually and assisted by software such as Mendeley for reference management. The complete process related to article selection is presented in the following figure 1:

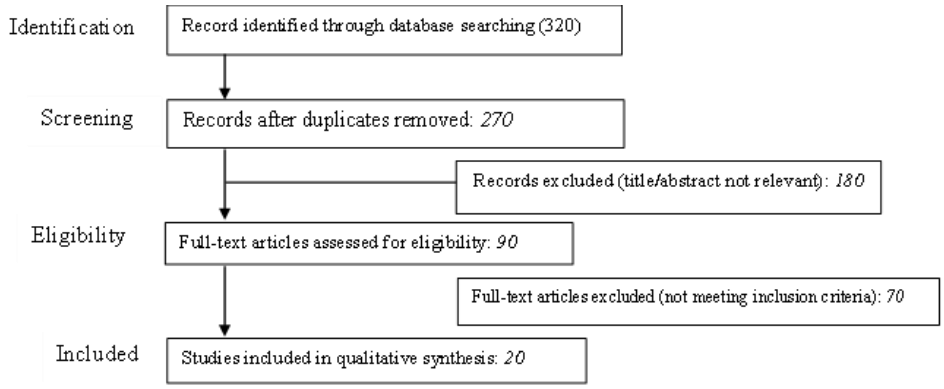


**Figure 1.** Selection Article Process.

## RESEARCH METHOD

This study utilised the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach to ensure transparency and rigour in the literature review process. The systematic literature review (SLR) followed four main stages: identification, screening, eligibility assessment, and inclusion. In the identification stage, a total of 320 articles were retrieved from four major databases: Scopus, Web of Science, ScienceDirect, and Google Scholar. The search strategy employed Boolean combinations of keywords such as "Change Management AND Infrastructure Project," "Strategic Change AND

Complex Projects," "Organizational Change AND Infrastructure Management," and "Project Transformation AND Infrastructure Complexity," targeting publications from 2019 to 2024 in English.

In the screening stage, 50 duplicate articles were removed using Mendeley reference management software and manual checks, leaving 270 articles. These remaining articles were screened based on their titles and abstracts to assess relevance to the research questions. During the eligibility assessment, 90 full-text articles were examined in detail to evaluate their alignment with the inclusion criteria. At this stage, 70 articles were excluded for reasons such as lacking focus on infrastructure projects, not addressing change management aspects, or being non-peer-reviewed publications.Finally, 20 studies that fully met the inclusion criteria were included in the qualitative synthesis and further thematic analysis. The PRISMA flow diagram and table summarising each stage of the selection process are provided in the appendices to enhance the transparency and replicability of this review.

The use of the PRISMA protocol in this study was justified by the need to compile a systematic, transparent, and replicable literature review, particularly in addressing the complexity of topics such as change management in complex infrastructure projects. Compared to other methods, PRISMA: provides a rigorous and documented structure, supports objective evaluation of relevant literature, and addresses the literature synthesis process scientifically and methodologically.

**Table 1.** PRISMA Flow Diagram

| Stage | Number of Records | Description |
|---|---|---|
| Identification | 320 | Articles identified through database searches (Scopus, Web of Science, ScienceDirect, Google Scholar). |
| Duplicates Removed | 50 | Duplicate articles removed using Mendeley and manual checking. |
| After Initial Screening | 270 | Articles screened based on title and abstract. |
| Irrelevant Articles (Title/Abstract) | 180 | Not relevant to the topic of change management in complex infrastructure projects. |
| Eligibility (Full-text assessed) | 90 | Full-text articles assessed for eligibility based on inclusion criteria. |
| Articles Excluded (Full-text) | 70 | Did not meet inclusion criteria, e.g., not focused on infrastructure or not an academic study. |
| Studies Included | 20 | Articles included in the final SLR analysis. |

The analysis focuses on the latest literature in the field of change management related to the management of complex infrastructure projects and mega-infrastructure projects. Large-scale infrastructure projects are rapidly evolving post-pandemic, so findings from before 2019 may be less relevant or may not reflect the latest practices. Therefore,

publications before 2019 were excluded, and only reputable English-language journals were analyzed.

## RESULTS AND DISCUSSION

### Results

Change management continues to be a major focus in various disciplines, especially in the context of digitalization, leadership, and organizational strategy. A study by (Hera et al., 2024) highlighted how change management frameworks address global challenges in software development, while (Van der Voet, J., & Vermeeren, 2023) reviewed various evidence-based interventions that can be applied to improve the effectiveness of organizational change across areas such as HR, strategy, and information systems management. A critical evaluation by (Rahman, 2023) suggested the need to develop a new conceptual framework in managing complex change. Other literature studies confirmed that managerial and leadership approaches have a significant influence on the success of organizational change (Sari, 2024) . In particular, *Transformational* and *Participative* leadership styles were found to be most effective in reducing resistance to change (Patel, 2023) ,and agile practices have also emerged as important responses to the dynamics of change in the digital era and global crisis (Hossain, 2024) . These studies demonstrate the need for organizations to be more adaptive, collaborative, and evidence-based in implementing change strategies, while highlighting the importance of managerial involvement in facilitating the transition to new organizational structures and cultures.

Digitalization and sustainability have become a major focus in modern infrastructure project management. A study by (Alsofiani, 2024) reveals the benefits and barriers to implementing *Building Information* Modeling (BIM) in infrastructure projects, which is strengthened by (Jaiswal, SV, Hunt, DVL, & Davies, 2024) through a systematic review of the adoption of *Construction 4.0 technologies* such as IoT and Big Data in developing countries. The application of BIM in road projects also received special attention in a global study by (Rahman et al., 2024) , which highlighted differences in maturity levels between countries. In addition, sustainability in infrastructure projects is also studied in depth, both in terms of sustainable development criteria (Ferreira, C., Monteiro, P., & Martins, 2024) and the integration of the *Triple Bottom Line* in construction project management (Opoku et al., 2021) . Social aspects are also considered through the analysis of *Social practices Procurement* that strengthens inclusive development (Matti, C., McGrath, P., & Turner, 2023) . The use of smart technologies such as AI and robotics, and their challenges in the construction sector, are also widely reviewed by (Wang, Y., Li, J., & Zhang, 2024) . On the financial side, (Liyanage et al., 2021) examines infrastructure project financing and identifies future research directions in risk management and financial structures. All these findings indicate that today's infrastructure projects require a cross-disciplinary approach that combines digital technology, sustainability, financial governance, and social aspects in an integrated manner.

*Strategic change* is an important theme in facing the dynamics of an increasingly complex business environment, including global crises such as COVID-19. Recent studies have shown that organizations that are able to avoid strategic inertia and adopt

innovation have better competitiveness, influenced by cognitive, political, and leadership factors (Silva, F., Mendes, L., & De Oliveira, 2024) . In this analysis, the role of marketing managers and CEOs as agents of strategic change is significant. This is evident in public communications and social media, which directly impact a company's reputation and performance during times of crisis. (Tuominen, P., Ritala, P., & Aarikka-Stenroos, 2023) . Transparent and two-way strategic communication has also been shown to increase the legitimacy of change and employee commitment (Veenstra, L., Meijerink, J., & Bondarouk, 2024) . On the other hand, even though the world is facing uncertainty, strategic planning remains relevant and useful in public organizations (George et al., 2023) . *Dynamic* -based approach *Capabilities* are increasingly adopted to design strategic *Road -Map* , especially in facing technological transformations such as Industry 4.0 (Ramirez, M., Ortega, R., & Duran, 2024) . The relationship between strategic management and business ecosystems is also increasingly being studied, especially in the context of sustainability and collaborative innovation (Fernández et al., 2024) . In the context of public organizations, a literature *review* highlights the importance of a strategic change management model that reflects structural and leadership factors (Zahra, A., Fadillah, S., & Munir, 2025) , which is in line with the *bibliometric trend* that the integration between strategic change and organizational performance is increasingly becoming a major focus in the global literature (Al-Khazali. et al., 2025) . Qualitative studies in Indonesia also emphasize the importance of adaptive leadership strategies in supporting organizational transformation (Wahyuni, N., Santosa, PB, & Aryani, 2023) .

Based on several review, conducted a bibliometric analysis to identify trends in modular construction-based supply chain management (He, Q., Qiang, M., & Zhao, 2024) , while (Semeraro, G., & Rossi, 2024) explored the use of *Digital Twins* in supporting change management of complex projects. (Rokou, A., & Sapountzis, 2024) developed a *Monte Carlo simulation-based strategic planning approach* , which supports dynamic project control. (Hosseini, M.R., Chileshe, N., & Zuo, 2024) highlighted the importance of supply chain sustainability in the face of construction project uncertainty. The logistics aspect is also studied by (Lindahl, G., & Josephson, 2024) , who explore the role of logistics as a coordination center in healthcare facility construction projects. On the other hand, (Shrestha, P.P., & Mahalingam, 2024) examines the ability of *mega- project* owner organizations to adapt to complexity and stakeholder dynamics. (Ali, H.A., & Alzahrani, 2023) confirmed the positive relationship between management strategy and project success, which is strengthened by the high level of project complexity. For the technology side, (Li, Y., Wang, W., & Liu, 2023) introduced deep reinforcement learning ( *Deep Reinforcement Learning* ) to optimize work flow and cash in construction projects. Meanwhile, (Tuli, G., & Naderpajouh, 2020) uncovered the vulnerability of large project networks through activity connectivity analysis. As a case study, (Davies, A., & Mackenzie, 2021) highlighted important lessons from the Crossrail project , especially related to system integration in large-scale infrastructure projects. All these findings show that the success of complex project management is greatly influenced by an adaptive approach, advanced technology, and well-structured organizational capabilities.

The following is a summary of the research gaps that are the focus of analysis in this study.

**Table 2.** Summary of the Research Gap

| Research Gap Area Gap Description | Explanation of the Gap |
|---|---|
| Practical implementation of the model | There is a lack of studies on the application of the proposed model |
| Methodological approach | Lack of longitudinal/experimental research testing causal effects |
| Agile/adaptive change management | Limited study on agile implementation in infrastructure projects |
| Interface/interdependency management | Not yet thoroughly explored technical and organizational interfaces during change |
| Systems thinking & flexibility | Lack of systemic and adaptive approaches in change management |
| Cultural context & governance | Little research on the influence of culture and leadership in change management |

Organizational change has become a central theme in recent studies between 2019 and 2024, focusing on human resource management practices, leadership, digital transformation, and organizational culture. (Al Nakeeb, AAR, Al Nuaimi, MAM, Ahmed, U., & Shah, 2024) reviewed the role of HR practices in supporting change in Western and non-Western contexts, while (Hasyim, H., & Bakri, 2024) discussed organizational readiness for hybrid work models. In the context of the Indonesian pharmaceutical industry, Chandra and (Chandra, KA, & Hendratmoko, 2024) highlighted the importance of a sense of security and fairness in bridging the impact of change on employee commitment. In the education sector, (Gustyan, D., & Anggarani, 2024) emphasized the importance of leadership in driving the success of institutional change. (Mukhlis, M., & Tyas, 2024) and (Sorsa, M., & Dechassa, 2023) systematically show that effective change management has a direct impact on organizational performance. (Hasyim, H., & Bakri, 2024) examine how digital technology shapes change strategies, while (Armstrong, R., Babri, M., Herath, GB, & Kask, 2024) emphasize the importance of balancing change and employee well-being. In the case of mergers, (Foelyati, R., & Dudija, 2024) point to organizational culture change as a major challenge, and (Neumann, M., Kuchel, T., Diebold, P., & Schön, 2024) identify barriers to building *Agile Mindset* as part of a broader cultural change. Overall, this study shows that organizational change is multidimensional and influenced by a variety of structural and psychosocial factors.

Recent studies between 2019 and 2024 show that infrastructure management is evolving significantly through the integration of digital technologies, sustainability systems, and post-disaster strategic approaches. (Taheri, A., & Sobanjo, 2024) reviewed *Civil Integrated Management* (CIM) in transportation projects and emphasizes its role in project data efficiency and integration. The use of artificial intelligence in infrastructure

construction is also reviewed by (Qiu et al., 2025) , which reveals the benefits and challenges of its adoption. Digital transformation in infrastructure projects is also highlighted by (Alsofiani, 2024) and (Qiu et al., 2025) , including digital twin , BIM, and IoT technologies that have been shown to accelerate managerial responses. (Juarez Quispe, J., Torres, S., & Herrera, 2025) combines a *System Dynamics approach* to design a sustainable infrastructure management model that integrates *the Life Cycle Assessment*. On the organizational side, (Eliwa, HK, Aziz, RF, & Abdelrahman, 2024) found that the alignment between information technology infrastructure and organizational structure affects the effectiveness of project implementation. (Talebi, S., Rezaei, F., & Yaghoubi, 2025) emphasized the importance of adopting Industry 4.0 technologies such as drones and simulations in infrastructure maintenance. Post-disaster infrastructure network restoration strategies are discussed by (Biswas, S., Cavdar, B., & Geunes, 2024) , which highlight the need for time- and resource-based decision making. In the Indonesian context, (Setiawan, C., & Amelia, 2024) examine the impact of mergers and acquisitions on the efficiency of the infrastructure sector, while (Rina, L., Sitorus, DS, & Santoso, 2024) evaluate the facility management system model based on the ADDIE learning approach. Overall, the results of these studies indicate that the success of infrastructure management is highly dependent on technological innovation, system integration, and the organization's ability to adapt to changing environmental challenges.

*Project Transformation* , especially in the context of digitalization, is a key strategy in improving the efficiency, sustainability, and competitiveness of organizations. (Vararean Cochisa, O., & Crisan, 2024) and (Sopi, R., Yudha, RA, & Nurhidayat, 2024) highlight that digital *transformation* in the construction industry relies on the integration of technologies such as BIM, IoT , and other digital systems to accelerate project innovation. (Naji, KK, Gunduz, M., & Al Hababi, 2024) and (Chomistriana, C., Mulyono, MT, & Najid, 2024) use the *Structural Equation Modeling (SEM)* to map digital transformation readiness and performance, emphasizing the importance of technology factors, policies, and public value measurement. (Jiang, 2023) and (Gemino, A., & Reich, 2023) remind that digital transformation must be managed as a strategic program involving project coordination, technology architecture management, product management, and human resource transformation. Other studies such as (Gilang, R., & Jane, 2023) and (Musahid, H., Raza, S., & Malik, 2024) emphasize the importance of *Digital Maturity* and sustainable strategies that are aligned with new business models. (Bonar, M., & Hastings, 2024) add a new dimension through a reference model for the integration of *Digital Engineering* in information system-based project management. These findings collectively emphasize that the success of project transformation depends not only on technology adoption, but also on organizational readiness, cross-functional management, and the continuity of the transformation vision and strategy.

Complexity in infrastructure management includes technological, social, organizational, and environmental dimensions that are interrelated and influence each other. (Hu, Z., Wu, G., Zheng, J., Zhao, X., & Zuo, 2023) through meta-analysis highlighted that project complexity (both technical and social) significantly impacts the success of project management and outcomes. In the context of megaprojects, (Sheng et al., 2024) emphasized the need for a managerial framework that is able to manage

uncertainty, *Multi- Stakeholder coordination* , and systemic dynamics . The application of digital technologies such as AI, BIM, and *Construction* 4.0 (Chen, K., Zhou, X., Bao, Z., & Skibniewski, 2025) has added a new dimension of complexity, but also offers opportunities for efficiency and better risk prediction (Alsofiani, 2024) . Complexity also emerges at the infrastructure handover stage to the operational phase, where eight key risk factors have been identified ("Risk Factor Prioritization in Infrastructure Handover to Operations," 2024) . In addition, the dynamic systems approach to sustainability and equity in infrastructure has also been highlighted (Ahmed, W., Ali, S., Asghar, M., & Ismailov, 2023) , while post-disaster infrastructure restoration strategies are reviewed by (Biswas, S., Cavdar, B., & Geunes, 2024) , highlighting the importance of cross-sector coordination and resource optimization. These studies show that managing infrastructure complexity requires a multidisciplinary approach, adaptive technologies, and consideration of social value and long-term sustainability.

**Discussion**

The results of a review of various recent literature show that change management has undergone significant evolution in dealing with organizational complexity, especially in the context of digitalization, leadership, and adaptive strategies. A study by (Hera et al., 2024) underlines the importance of a robust change management framework in responding to global challenges, especially in the software development sector, which demands organizational resilience to rapid technological dynamics. Meanwhile, (Van der Voet, J., & Vermeeren, 2023) emphasizes the role of evidence-based interventions as an effective approach to driving organizational change holistically, covering aspects of human resources, organizational strategy, and information systems.

In a conceptual context, (Rahman, 2023) offers constructive criticism of the old framework of change management, and encourages the need to develop new models that are better able to handle complex and dynamic changes. Leadership style is also an important variable, as highlighted by (Sari, 2024) who emphasized that the managerial role greatly determines the direction and success of change. In fact, (Patel, 2023) identified that transformational and participatory leadership styles are significantly able to reduce resistance to change, by creating greater involvement from all elements of the organization. Integration of digital technology, and adoption of agile practices (Hossain, 2024) also becomes a relevant adaptive response amidst the demands of an unstable external environment, including due to the global crisis. Overall, these findings emphasize the need for organizations to become more adaptive, collaborative, and evidence-based entities in every stage of change management, as well as strengthening the role of leadership in shaping organizational structures and cultures that are responsive to change.

The development of modern infrastructure projects shows a paradigm shift towards digitalization and sustainability as two main pillars in its management. A study by (Alsofiani, 2024) highlights the significant benefits as well as the obstacles still faced in the implementation of *Building Information Modeling* (BIM), especially in the context of efficiency and coordination between stakeholders. This is in line with a systematic review by (Jaiswal, SV, Hunt, DVL, & Davies, 2024) which emphasizes the great potential of

Construction 4.0 technology " *Internet of Things* " ( IoT ) and Big Data, to improve project productivity, although the adoption rate is still variable, especially in developing countries. (Rahman et al., 2024) reinforce the importance of BIM in road projects by showing differences in implementation maturity levels across countries, reflecting gaps in technology and policy readiness.

On the other hand, infrastructure sustainability is now not only seen from an environmental dimension, but also through the *Triple A framework. Bottom Line* which includes economic and social aspects (Opoku et al., 2021) , as well as technical criteria for sustainable development (Ferreira, C., Monteiro, P., & Martins, 2024) . Attention to the social dimension is increasingly strengthened through the practice *of Social Procurement* oriented towards inclusive development (Matti, C., McGrath, P., & Turner, 2023) . Furthermore, smart technologies such as artificial intelligence (AI) and robotics bring new efficiency opportunities as well as integration challenges in the construction sector (Wang, Y., Li, J., & Zhang, 2024) . From a financial perspective, (Liyanage et al., 2021) highlighted the importance of innovation in financing and risk management, and called for a more strategic research direction in infrastructure financing structures. All these findings show that infrastructure project management now requires a cross-disciplinary approach that integrates digital technologies, sustainability principles, adaptive financial structures, and sensitivity to social values, in order to create efficient, inclusive, and resilient infrastructure.

*Strategic Change* is a key element in responding to the dynamics of a constantly changing and uncertain business environment, including global crises such as the COVID-19 pandemic. Recent studies indicate that organizations that are able to avoid strategic inertia and actively adopt innovations have a stronger competitive advantage. Factors such as organizational cognition, internal political dynamics, and leadership style play an important role in driving these changes (Silva, F., Mendes, L., & De Oliveira, 2024) . In this context, the role of marketing managers and CEOs as strategic change agents is very important, especially in managing public communication and social media that directly affect the reputation and performance of the organization during a crisis. (Tuominen, P., Ritala, P., & Aarikka-Stenroos, 2023) .

A transparent and two-way strategic communication approach has been shown to increase the legitimacy of the change process and build employee commitment to organizational transformation (Veenstra, L., Meijerink, J., & Bondarouk, 2024) . In the public sector, strategic planning remains relevant despite high levels of uncertainty, and is able to provide direction and stability for decision-making (George et al., 2023) . Furthermore, the *Dynamic Capabilities* are increasingly being adopted, especially in developing *strategic roadmaps* to face the challenges of technological disruption such as Industry 4.0 (Ramirez, M., Ortega, R., & Duran, 2024) . The relationship between organizational strategy and business ecosystems is also highlighted, especially in the context of sustainability and collaborative innovation (Fernández et al., 2024) . In the realm of public organizations, the importance of strategic change management models that consider structural and leadership factors is increasingly emphasized (Zahra, A., Fadillah, S., & Munir, 2025) , in line with *Bibliometric findings* that show increasing global attention to the integration between strategic change and organizational performance

(Al-Khazali. et al., 2025) . At the local level, qualitative studies in Indonesia also strengthen these findings by highlighting the effectiveness of adaptive leadership strategies in supporting the success of organizational transformation (Wahyuni, N., Santosa, PB, & Aryani, 2023) .

Complex project management in the construction sector increasingly demands an adaptive, technology-based, and strategically integrated approach. *Bibliometric analysis* by (He, Q., Qiang, M., & Zhao, 2024) reveals the trend of modular construction-based supply chain management in response to the demands for efficiency and flexibility. In the context of digital transformation, (Semeraro, G., & Rossi, 2024) showed that the implementation of *Digital Twin* plays a vital role in supporting change management in complex projects. The *Monte Carlo simulation-based planning approach* as developed by (Rokou, A., & Sapountzis, 2024) is a solution for dynamic project control amidst uncertainty. (Hosseini, M.R., Chileshe, N., & Zuo, 2024) emphasizes the importance of supply chain sustainability in construction projects that are prone to disruption, while (Lindahl, G., & Josephson, 2024) identifies logistics as a crucial coordination center, especially in healthcare facility construction projects. Furthermore, (Shrestha, P.P., & Mahalingam, 2024) explores the capabilities of *megaproject owner organizations* in managing the complexity of stakeholder relationships adaptively.

From a strategic perspective, (Ali, HA, & Alzahrani, 2023) underlines the importance of aligning management strategies with the level of project complexity to ensure successful implementation. Technological advances are also leveraged through deep reinforcement learning ( *Deep Reinforcement Learning* ) to optimize project work flow and cash, as shown by (Li, Y., Wang, W., & Liu, 2023) . In addition, (Tuli, G., & Naderpajouh, 2020) analyzed the vulnerability of activity networks in large projects through an Interdependency approach , which helps anticipate systemic failures. The *Crossrail* project case study reviewed by (Davies, A., & Mackenzie, 2021) provides important lessons on the importance of system integration in large-scale infrastructure projects.

Overall, these findings confirm that the success of complex project management is highly dependent on the integration of organizational capabilities, adaptive strategies, and the use of advanced technologies to address structural challenges and *stakeholder dynamics.* the high one. Organizational change (*Organizational Change*) is a central theme in various recent studies between 2019 and 2024, which shows that the dynamics of change are multidimensional and include structural, psychosocial, and technological aspects. A review by (Al Nakeeb, AAR, Al Nuaimi, MAM, Ahmed, U., & Shah, 2024) highlights the importance of adaptive human resource management (HRM) practices in supporting organizational change, both in Western and non-Western contexts. A study by (Hasyim, H., & Bakri, 2024) adds that organizational readiness to face a hybrid work model is an important indicator of the success of post-pandemic transformation.

In the Indonesian pharmaceutical sector, Chandra and (Chandra, KA, & Hendratmoko, 2024) showed that perceptions of security and fairness are very influential in maintaining employee commitment to structural change. The educational context is also inseparable from this dynamic, where transformative leadership has proven crucial in driving the success of institutional change (Gustyan, D., & Anggarani, 2024) . Furthermore, the effectiveness of good change management has been shown to have a

positive correlation with increased organizational performance, as stated in the findings (Mukhlis, M., & Tyas, 2024) and (Sorsa, M., & Dechassa, 2023) .

The role of digital technology is also increasingly being considered as a key driver of organizational strategic change, as reviewed by (Han et al., 2024) , while (Armstrong, R., Babri, M., Herath, GB, & Kask, 2024) emphasize the importance of maintaining a balance between the demands of change and employee well-being. Studies in the context of organizational mergers reveal that cultural change is a major challenge, with the need to build *Agile Mindset* as an integral part of the transformation (Foelyati, R., & Dudija, 2024) . These findings as a whole show that organizational change requires not only a technical and structural approach, but also a *Humanistic approach* that considers the psychological conditions, work culture, and adaptive readiness of all elements of the organization.

Furthermore, post-disaster infrastructure restoration strategies are highlighted in research (Biswas, S., Cavdar, B., & Geunes, 2024) that emphasizes the importance of time-based decision making and resource efficiency. In the Indonesian context, a study by (Setiawan, C., & Amelia, 2024) explores the impact of mergers and acquisitions on infrastructure sector efficiency, while (Rina, L., Sitorus, DS, & Santoso, 2024) evaluates a facility management model based on the ADDIE approach that is adaptive to changing system needs. Overall, these findings suggest that the success of modern infrastructure management is highly dependent on the synergy between technological innovation, management system integration, and the organization's ability to respond proactively and strategically to change and uncertainty.

Project transformation, especially in the context of digitalization, has become a key strategy in improving operational efficiency, sustainability, and competitiveness of organizations in various sectors, especially construction and infrastructure. Studies by (Vararean Cochisa, O., & Crisan, 2024) and (Sopi, R., Yudha, RA, & Nurhidayat, 2024) emphasize that digital transformation in the construction industry relies heavily on the integration of technologies such as *Building Information Modeling* (BIM), *Internet of Things* ( IoT ), and other digital systems that drive accelerated innovation and project collaboration. Meanwhile, the quantitative approach through *Structural Equation Modeling* (SEM) conducted by (Naji, KK, Gunduz, M., & Al Hababi, 2024) and (Chomistriana, C., Mulyono, MT, & Najid, 2024) , maps the relationship between digital transformation readiness and project performance, highlighting the importance of policy support, technological readiness, and public value measurement mechanisms. The strategic perspective is also put forward by (Jiang, 2023) and (Gemino, A., & Reich, 2023) who emphasize that digital transformation is not just technology adoption, but an integrated strategic program that includes project coordination, IT architecture management, product management, and human resource development. Studies by (Gilang, R., & Jane, 2023) and (Gilang, R., & Jane, 2023) , as well as (Musahid, H., Raza, S., & Malik, 2024) , underline the importance of *Digital Maturity* and the formulation of long-term strategies that are aligned with new business models so that digital transformation is not reactive, but sustainable.

In addition, (Bonar, M., & Hastings, 2024) introduced a reference model for the integration of *Digital Engineering* in information system-based project management, which adds a structural dimension to the digital transformation of projects. Overall, these

findings indicate that the success of project transformation is largely determined by the overall readiness of the organization, cross-functional management capabilities, and the continuity of the digital transformation vision and strategy in a long-term framework.

Through a meta-analysis approach, (Hu, Z., Wu, G., Zheng, J., Zhao, X., & Zuo, 2023)asserted that project complexity, both technically and socially, plays a significant role in determining managerial effectiveness and project outcome achievement. On a megaproject scale, (Sheng et al., 2024)highlighted the need for a managerial framework capable of managing high uncertainty, systemic dynamics , and cross-stakeholder coordination. On the other hand, the application of digital technologies such as *Artificial Intelligence* (AI), *Building Information Modeling* (BIM), and *Construction 4.0 technologies* as described by Chen et al. (2025), not only adds a new layer of complexity, but also opens up opportunities for operational efficiency and increased predictive capabilities for risk (Alsofiani, 2024) .

The complexity of management is also seen in the infrastructure handover phase to the operational stage, where eight major risk factors have been identified and require special handling ("Risk Factor Prioritization in Infrastructure Handover to Operations," 2024). Sustainability and equity aspects also add to the social dimension of this complexity, as raised in the dynamic systems approach by (Ahmed, W., Ali, S., Asghar, M., & Ismailov, 2023). Meanwhile, in the post-disaster context , a study by (Biswas, S., Cavdar, B., & Geunes, 2024) , shows the importance of a restoration strategy that prioritizes cross-sector coordination and optimal resource allocation. These findings collectively emphasize that managing complexity in infrastructure cannot be simplified through a linear approach, but rather requires multidisciplinary collaboration, the use of adaptive technologies, and the integration of sustainability and social justice values throughout the project cycle. The following is a screening table of journal review results (see Table 2).

**Table 3.** Previous Research Mapping

| No. | Author (Year) | Main Topics | Focus of Findings |
|---|---|---|---|
| 1 | Hera et al. (2024) | Change Management | Global challenges of software development. |
| 2 | Van der Voet & Vermeeren (2023) | Change Management | Evidence-based interventions for organizational effectiveness. |
| 3 | Rahman (2023) | Change Management | A new conceptual framework for complex change is needed. |
| 4 | Sari (2024) | Change Management | Leadership influences the success of organizational change. |
| 5 | Patel (2023) | Change Management | Transformational & participative leadership effectively reduces resistance. |
| 6 | Alsofiani (2024) | Digitalization & BIM | Benefits & barriers of BIM in infrastructure projects. |

| No. | Author (Year) | Main Topics | Focus of Findings |
|---|---|---|---|
| 7 | Jaiswal et al. (2024) | Digitalization & BIM | Adoption of Construction 4.0 technology in developing countries. |
| 8 | Rahman et al. (2024) | Digitalization & BIM | Differences in BIM maturity levels between countries. |
| 9 | Ferreira et al. (2024) | Infrastructure Sustainability | Criteria for sustainable development of construction projects. |
| 10 | Opoku et al. (2021) | Infrastructure Sustainability | Triple bottom line in construction management. |
| 11 | Matti et al. (2023) | Social Aspects of Infrastructure | Social procurement for inclusive development. |
| 12 | Wang et al. (2024) | Digitalization & AI | AI and robotics in construction, benefits and challenges. |
| 13 | Liyanage et al. (2021) | Infrastructure | Project financing and risk management research directions. |
| 14 | Silva et al. (2024) | Strategic Change | Avoid strategic inertia, cognitive factors & leadership are important. |
| 15 | Tuominen et al. (2023) | Strategic Change | The role of marketing managers & CEOs as change agents. |
| 16 | Veenstra et al. (2024) | Strategic Change | Strategic communication increases the legitimacy of change. |
| 17 | George et al. (2023) | Strategic Change | Strategic planning remains relevant in public organizations. |
| 18 | Ramirez et al. (2024) | Strategic Change | Dynamic capabilities for Industry 4.0 technology transformation. |
| 19 | Fernández et al. (2024) | Strategic Change | The relationship between strategic management and collaborative innovation. |
| 20 | Zahra et al. (2025) | Strategic Change | Strategic change model of public organizations. |
| 21 | Al-Khazali et al. (2025) | Strategic Change | Integration of strategic change and organizational performance. |
| 22 | Wahyuni et al. (2023) | Adaptive Leadership | The importance of adaptive leadership in organizational transformation. |
| 23 | He et al. (2024) | Supply Chain & Modular | Modular construction supply chain management trends. |
| 24 | Semeraro & Rossi (2024) | Digital Twin | Supports complex project change management. |

| No. | Author (Year) | Main Topics | Focus of Findings |
|---|---|---|---|
| 25 | Rokou & Sapountzis (2024) | Strategic Planning | Monte Carlo simulation for dynamic project control. |
| 26 | Hosseini et al. (2024) | Supply Chain | Sustainability of construction project supply chain. |
| 27 | Lindahl & Josephson (2024) | Infrastructure Logistics | Logistics as a coordination center for health facilities. |
| 28 | Shrestha & Mahalingam (2024) | Megaproject | Adaptation of the owner organization to stakeholder complexity. |
| 29 | Ali & Alzahrani (2023) | Project Strategy | Management strategies increase the success of complex projects. |
| 30 | Li et al. (2023) | AI Construction | Deep reinforcement learning optimizes project workflow. |
| 31 | Deaf & Naderpajouh (2020) | Big Project | Vulnerability of large project networks and interconnectedness of activities. |
| 32 | Davies & Mackenzie (2021) | Crossrail Case Study | Integration of large infrastructure project systems. |

The following is a bar chart of the screening results of the journal review.

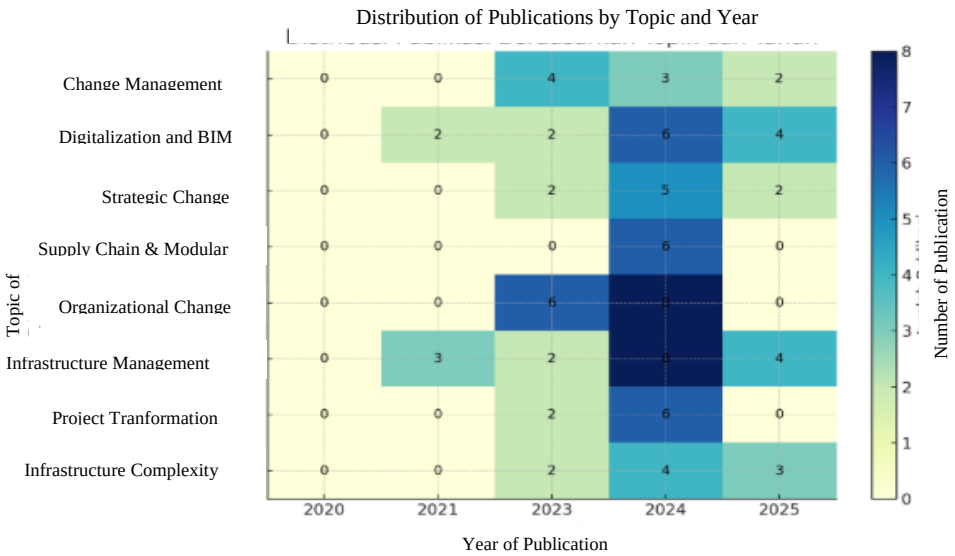


**Figure 2.** Screening Result of The Journal Review

The diagram in figure 2 shows that the trend in publication topics related to change management in project management is seen in the topics of change management, digitalization, change strategy, infrastructure management, and infrastructure complexity. These themes demonstrate that there is still much to be explained in project management, especially in the digital era. This presents both an opportunity and a

challenge for researchers and practitioners in the field of project management to conduct research and analysis related to the methods applied in project management.

## CONCLUSION

**Fundamental Findings:** This literature review confirms that modern infrastructure project management is undergoing a significant paradigm shift, with digitalization and sustainability becoming the main foundations. The integration of technologies such as BIM, IoT, Big Data, artificial intelligence, and robotics opens up great opportunities to improve project efficiency, productivity, and coordination, although their implementation still faces challenges in terms of technological and policy readiness in various countries. On the other hand, the sustainability approach is now expanding beyond the environmental aspect alone, by integrating economic and social dimensions through the *Triple Stake* framework. *Bottom Line and Social* practices *Inclusive procurement*. In addition, innovation in financing and risk management are inseparable strategic elements in supporting adaptive infrastructure development. Overall, the SLR findings emphasize the need for a cross-disciplinary approach that combines cutting-edge digital technologies, comprehensive sustainability principles, innovative financing structures, and social sensitivity, to produce efficient, inclusive, and future-proof infrastructure. Overall, this literature review shows that *Strategic Change* is a determining factor for organizations in facing the dynamics of a constantly changing business environment, full of uncertainty, and global challenges such as the COVID-19 pandemic. The success of strategic change is not only determined by the speed of adoption of updates, but also by organizational cognition factors, internal political dynamics, and effective leadership styles. The role of leaders, both marketing managers and CEOs, as strategic change agents is becoming increasingly crucial in managing public communication and social media to maintain the reputation and performance of the organization. A transparent and two-way strategic communication approach has been shown to increase employee legitimacy and commitment to organizational transformation. In addition, the adoption of *Dynamic Capabilities* and strategic *road -map preparation* are important steps in responding to technological disruptions such as Industry 4.0. This finding also emphasizes the importance of collaboration of business ecosystems that are oriented towards sustainability and joint innovation. Thus, organizations are required to develop a strategic change management model that is adaptive, integrative, and responsive, in order to achieve competitive advantage and sustainable organizational performance in the future.

***Implication:*** Organizational change is a multidimensional process that requires integration between adaptive strategies, organizational capabilities, digital technology, and a *Humanistic approach* that considers psychological conditions and work culture. The success of change management depends not only on technical and structural implementation, but also on the readiness of human resources, transformative leadership, and sensitivity to social dynamics and perceptions of justice in the work environment. Implementation of a hybrid work model, *Agile development Mindset,* and the use of digital technology have proven to be important drivers in supporting organizational transformation in the current post-pandemic and technological disruption era. Thus, organizations need to develop a holistic, collaborative, and employee-oriented

approach to change, in order to create sustainable change and improve organizational performance amidst the increasingly complex dynamics of the global business environment.

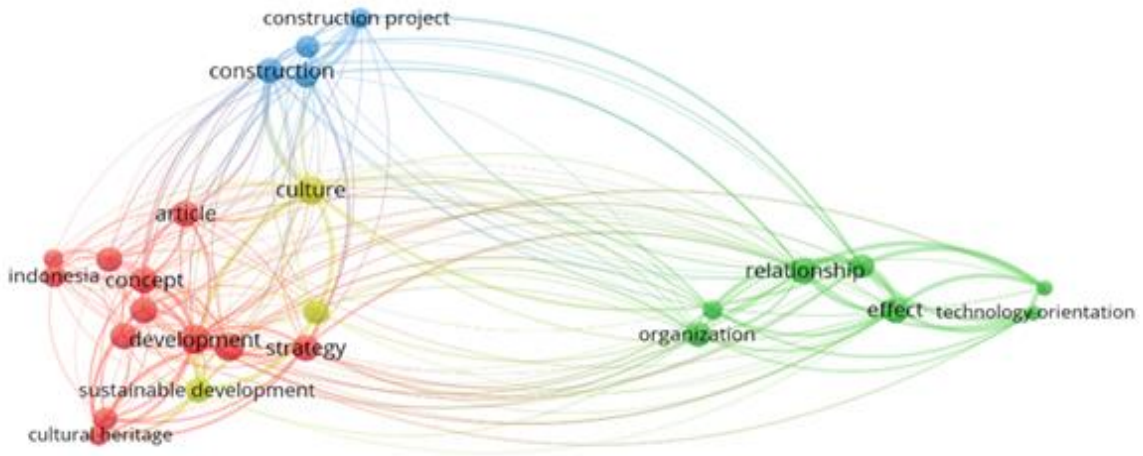


**Figure 3.** Network Visualization

The results of the literature review confirm that project transformation, especially through digitalization, has become a fundamental strategy in improving the efficiency, sustainability, and competitiveness of organizations in the construction and infrastructure sector. The success of this transformation depends not only on the adoption of technologies such as BIM, *IoT*, AI, and *Construction* 4.0, but also on the overall readiness of the organization, policy support, technology readiness, and long-term strategic alignment with new business models. The findings also show that project digital transformation is an integrated strategic program that includes strengthening IT architecture management, cross-functional coordination, and human resource development to ensure sustainable innovation.

***Limitation:*** This study only included literature published in English. Risk of underrepresenting local or regional perspectives that could provide distinct insights into change management strategies in infrastructure environments with unique cultural and institutional contexts. Limited access to and interpretability of non-English articles. Efforts to maintain consistency and quality analysis. Although the PRISMA protocol was used to improve systematic study selection, the potential for selection bias remains. Inclusion and exclusion decisions (e.g., based on title or abstract) may be influenced by the researcher's objective judgment, especially when criteria are not fully standardized or conducted by a single reviewer. Studies with unclear titles or keywords that are actually relevant may be missed (false negatives). Multiple review and discussion among reviewers can mitigate this bias (although it remains limited if there are few reviewers). Explicitly explaining selection criteria helps increase transparency. Only articles from peer-reviewed scientific journals were included. Studies that were unpublished or found in the gray literature (institutional reports, government reports, dissertations, white papers) could contain important information, especially on large-scale public infrastructure projects. The tendency to publish only studies with "positive" or

"interesting" results can lead to an overrepresentation of certain findings, while failures or alternative approaches may not be reflected in the analysis.

Articles published before 2019 were excluded from the analysis. Fundamental or seminal studies published before 2019 may have important value but were excluded. This restriction ignores the historical context or evolution of change management strategies in complex infrastructure projects over the previous decade. Because studies come from diverse geographic contexts, industry sectors, and research methodologies, there is likely high heterogeneity among the reviewed studies. It is difficult to generalize findings to all complex infrastructure projects due to the wide variety of local characteristics. Final, literature was obtained from databases such as Scopus, Web of Science, and Google Scholar. If important studies are only available in other databases (e.g., IEEE Xplore, ProQuest, or university repositories), they may be missed from the initial selection process. There is potential for missing regional or national articles published only in local journals.

***Future Research:*** Future research needs to broaden methodological and geographic approaches and deepen understanding of micro and technical variables that have received less attention. By adopting a comparative case study approach, a longitudinal design, and a focus on mid-level actors and digital technologies, new studies can make more relevant practical contributions to the real-world challenges facing complex infrastructure projects around the world. Current literature is largely dominated by studies from developed countries, particularly Europe, North America, and Australia. Consequently, understanding of change management practices in developing country contexts remains limited. Future research should focus on complex infrastructure projects in Southeast Asia, Sub-Saharan Africa, Latin America, and the Middle East. Focus on aspects such as institutional complexity, collectivist culture, bureaucracy, and the role of local government in change decision-making. Agile approaches are still rarely applied consistently in large-scale infrastructure projects, even though they are highly relevant in the context of dynamic change. In complex infrastructure projects involving multiple contractors, consultants, and stakeholders, change often occurs at interfaces. Future studies should focus on cross-organizational change management, including managing the risks resulting from conflict between project owners and technical implementers. Furthermore, they could also consider developing collaborative models among stakeholders to mitigate resistance to change.

## REFERENCES

Ahmed, W., Ali, S., Asghar, M., & Ismailov, A. (2023). Assessment and analysis of the complexities in sustainability of the transport projects under CPEC: A grounded theory approach. *Frontiers in Built Environment*, *9*. https://doi.org/10.3389/fbuil.2023.1132151

Al-Khazali., Alazzawi., & Hamdan. (2025). Change management and organizational performance: Current key trends. *Journal of Organizational Change Management*, *38*(1), 45–61.

Al Nakeeb, A. A. R., Al Nuaimi, M. A. M., Ahmed, U., & Shah, S. M. M. (2024). Human resource management practices for effective organizational change: A review of research in Western and non-Western countries. *Asian Business & Management*, *23*, 211–237. https://doi.org/10.1057/s41291-023-00210-1

Ali, H. A., & Alzahrani, J. I. (2023). Impact of project management strategies and project

complexity on project success. *International Journal of Project Organisation and Management*, *15*(1), 1–18. https://doi.org/10.1504/IJPOM.2023.127561

Alsofiani, M. A. (2024). *Digitalization in Infrastructure Construction Projects: A PRISMA-Based Review of Benefits and Obstacles*. Cornel university. https://doi.org/https://doi.org/10.48550/arXiv.2405.16875

Armstrong, R., Babri, M., Herath, G. B., & Kask, J. (2024). Guest editorial: Change, well-being and meaning in organizations. *Journal of Organizational Change Management*, *37*(1), 1–6. https://doi.org/10.1108/JOCM-01-2024-112

Biswas, S., Cavdar, B., & Geunes, J. (2024). A review on response strategies in infrastructure network restoration. *European Journal of Operational Research, 310*(3), 1046–1062. https://doi.org/10.1016/j.ejor.2023.07.014

Bonar, M., & Hastings, N. (2024). Transforming information systems management: A reference model for digital engineering integration. *Journal of Information Systems Engineering & Management*, *9*(1), 1–13. https://doi.org/10.55266/jisem.2024.9.1.01

Chandra, K. A., & Hendratmoko, H. (2024). The impact of organizational change on organizational commitment and the mediation effect of job security, trust and justice in pharmaceutical industry in Indonesia. *International Journal of Recent Advances in Multidisciplinary Topics*, *5*(3), 104–109.

Chen, K., Zhou, X., Bao, Z., & Skibniewski, M. J. (2025). Artificial intelligence in infrastructure construction: A critical review. *Automation in Construction*, *162*. https://doi.org/10.1016/j.autcon.2025.105143

Chomistriana, C., Mulyono, M. T., & Najid, N. A. (2024). Exploring the performance domain causal relationship of digital government transformation project management. *International Journal of Project Organisation and Management*, *16*(1), 1–15.

Davies, A., & Mackenzie, I. (2021). Systems integration in infrastructure projects: Seven lessons from Crossrail. *Project Management Journal*, *52*(2), 139–155. https://doi.org/10.1177/8756972820980930

Eliwa, H. K., Aziz, R. F., & Abdelrahman, M. (2024). Organizational infrastructure and information and communication technology infrastructure alignment in construction organizations. *Alexandria Engineering Journal*, *78*, 1693–1705. https://doi.org/10.1016/j.aej.2023.08.015

Errida, A., & Lotfi, B. (2021). The determinants of organizational change management success: Literature review and case study. *International Journal of Engineering Business Management*, *13*. https://doi.org/10.1177/18479790211016273

Fernández, M., Ritala, P., & Makinen, S. (2024). Strategic management and business ecosystem scientific relations—key areas review. *Technological Forecasting and Social Change*, *203*. https://doi.org/10.1016/j.techfore.2024.123456

Ferreira, C., Monteiro, P., & Martins, J. (2024). A systematic review of sustainability criteria in infrastructure development. *Sustainability*, *16*(5), 2033. https://doi.org/10.3390/su16052033

Foelyati, R., & Dudija, N. (2024). The impact of a merger on changes in organizational culture: A systematic literature review. *Journal of Industrial Engineering & Management Research*, *5*(2), 15–26.

Gemino, A., & Reich, B. H. (2023). Program management within digital transformation: The emerging importance of technology architecture, product management, and human capital transformation. *Project Management Journal*, *54*(4), 352–368. https://doi.org/10.1177/87569728231177536

George, B., Walker, R. M., & Boyne, G. (2023). Strategic planning in turbulent times: Still useful?

*Public Management Review*, *25*(3), 367–385. https://doi.org/10.1080/14719037.2022.2093437

Gilang, R., & Jane, R. (2023). Digital transformation: Digital maturity, competitive strategy, and sustainable business model in construction industry. *Indonesian Journal of Business and Technology*, *2*(1), 12–21.

Gustyan, D., & Anggarani, A. (2024). The effect of leadership in organizational change in schools. *International Journal of Education, Learning and Development*, *12*(2), 22–31.

Han, W., Zhou, Y., & Lu, R. (2024). Strategic orientation, business model innovation and corporate performance—Evidence from construction industry. *Journals.Sagepub*, *37*(4).

Hasyim, H., & Bakri, M. (2024). Organizational transformation in adopting hybrid work models: A literature review on organizational changes and employee readiness. *International Journal of Organizational Analysis*, *6*(1), 1–9. https://doi.org/10.1108/IJOA-03-2023-3660

He, Q., Qiang, M., & Zhao, X. (2024). A bibliometric analysis of supply chain management within modular integrated construction in complex project management. *Journal of Building Engineering*, *89*. https://doi.org/10.1016/j.jobe.2024.108547

Hera, S. H., Purwanggono, B., & Ulkhaq, M. M. (2024). Perancangan Manajemen Risiko Pada Proyek Pembangunan Laboratorium Terintegrasi Fakultas Teknik UNDIP. *Industrial Engineering Online Journal*, *13*, 1–9.

Hidayat, R., & salahudin, salahudin. (2021). Perencanaan Pembangunan Infrastruktur Yang Berkelanjutan Sebuah Kajian Pustaka Terstruktur (Systematic Literature Review. *Jurnal Studi Kepemerintahan*, *4*(2).

Hossain, M. (2024). Managing strategic change in business world. *International Journal of Research in Technology and Business Trends*, *8*(3), 45–55.

Hosseini, M. R., Chileshe, N., & Zuo, J. (2024). Construction supply chain management: A systematic literature review and future development. *Journal of Cleaner Production*, *357*. https://doi.org/10.1016/j.jclepro.2022.131840

Hu, Z., Wu, G., Zheng, J., Zhao, X., & Zuo, J. (2023). Unravelling effects of project complexity on project success and project management success: A meta-analytic review. *International Journal of Project Management*, *41*(2). https://doi.org/10.1016/j.ijproman.2022.102373

Jaiswal, S. V., Hunt, D. V. L., & Davies, R. J. (2024). Construction 4.0: A systematic review of its application in developing countries. *Journal of Building Engineering*, *83*. https://doi.org/10.1016/j.jobe.2023.106977

Jennifer Whyte, Ranjith Soman, Rafael Sacks, Neda Mohammadi, Nader Naderpajouh, Ting, W. H., & Ghang Lee. (2024). Using digital twins for managing change in complex projects. *Electrical Engineering and Systems Science*, *1*.

Jiang, M. (2023). From information technology projects to digital transformation programs: Research pathways. *Information Systems Frontiers*, *25*(6), 1601–1671. https://doi.org/10.1007/s10796-023-10409-9

Juarez Quispe, J., Torres, S., & Herrera, F. (2025). Advancing sustainable infrastructure management: Insights from system dynamics. *Sustainable Cities and Society*, *99*. https://doi.org/10.1016/j.scs.2024.104689

Li, Y., Wang, W., & Liu, H. (2023). Adaptive control of resource flow to optimize construction work and cash flow via online deep reinforcement learning. *Automation in Construction*, *148*. https://doi.org/10.1016/j.autcon.2023.104783

Lindahl, G., & Josephson, P. E. (2024). Making logistics a central core in complex construction projects: A power-dependency analysis. *Automation in Construction*, *42*(2), 157–170. https://doi.org/10.1016/j.ijproman.2024.03.003

Liyanage, L. C., Villalba-Romero, F., & Liyanage, C. (2021). Infrastructure project finance: A systematic literature review and directions for future research. *Qualitative Research in*

*Financial Markets*, *13*(1), 83–108. https://doi.org/10.1108/QRFM-10-2019-0125

Matti, C., McGrath, P., & Turner, A. (2023). A systematic literature review of research on social procurement in the construction and infrastructure sector. *Sustainability*, *15*(15), 11245. https://doi.org/10.3390/su151511245

Mukhlis, M., & Tyas, A. A. W. P. (2024). The role of change management in improving organizational performance. *International Journal of Social Science Research and Review*, *7*(2), 145–152.

Musahid, H., Raza, S., & Malik, M. (2024). Digital transformation: A strategic imperative for modern enterprises. *Journal of Enterprise Transformation*, *14*(2), 89–105.

Naji, K. K., Gunduz, M., & Al Hababi, K. M. (2024). Mapping the digital transformation maturity of the building construction industry using structural equation modeling. *Journal of Building Engineering*, *87*. https://doi.org/10.1016/j.jobe.2023.106963

Najib, N., Simail, S., Amat Che, R., Durdyev, S., Konecna, Z., & Chofreh, A. (2022). Stakeholders' Impact Factors of the COVID-19 Pandemic on Sustainable Mixed Development Projects: A Systematic Review and Meta-Analysis. *Kournals Sustainability*, *14*(16), 10418.

Neumann, M., Kuchel, T., Diebold, P., & Schön, E.-M. (2024). Agile culture clash: Unveiling challenges in cultivating an agile mindset in organizations. *Journal of Organizational Change Management, 37*(2), 213–232. https://doi.org/10.1108/JOCM-03-2023-0114

Opoku, A., Ahmed, V., & Akotia, J. (2021). Sustainability in construction projects: A systematic literature review. *Sustainability, 13*(1), 276. https://doi.org/10.3390/su13010276

Patel, D. (2023). Prevailing leadership styles in change management: Evidences from existing research. *International Journal of Public Business Review*, *12*(4), 90–103.

Qiu, S., Zaheer, Q., Ali, F., Wajid, S., Chen, H., Ai, C., & Wang, J. (2025). Exploring the impact of digital twin technology in infrastructure management: a comprehensive review. *JOURNAL OF CIVIL ENGINEERING AND MANAGEMENT*, *31*(4). https://doi.org/10.3846/jcem.2025.23718

Rahman, M. (2023). Evaluating organizational change management. *International Journal of Recent Advances in Multidisciplinary Topics*, *4*(3), 55–60.

Rahman, M., Almutairi, M., & Chowdhury, S. (2024). A review of global efforts in BIM adoption for road infrastructure. *Infrastructures*, *9*(8), 110. https://doi.org/10.3390/infrastructures9080110

Ramirez, M., Ortega, R., & Duran, J. (2024). Developing a strategic roadmap towards integration in Industry 4.0: A dynamic capabilities theory perspective. *Technovation*, *132*. https://doi.org/10.1016/j.technovation.2024.102724

Rina, L., Sitorus, D. S., & Santoso, T. N. B. (2024). Latest innovations in facilities and infrastructure management: Implementation of an efficient management system. *Journal of Technical and Vocational Education, 10*(1), 22–31.

Risk factor prioritization in infrastructure handover to operations. (2024). *International Journal of Project Management*, *42*(1). https://doi.org/10.1016/j.ijproman.2023.102404

Rokou, A., & Sapountzis, D. (2024). Advancing strategic planning and dynamic control of complex projects. *Automation in Construction*, *159*. https://doi.org/10.1016/j.autcon.2024.105031

Santos, R., Piqueiro, H., Dias, R., & Rocha, C. (2024). Transitioning trends into action: A simulation-based Digital Twin architecture for enhanced strategic and operational decision-making. *Computers & Industrial Engineering*, *198*. https://doi.org/10.1016/j.cie.2024.110616

Sari, L. (2024). The role of change management in improving organizational performance. *Jurnal Ilmiah Manajemen Kesatuan*, *12*(2), 112–121.

Semeraro, G., & Rossi, M. (2024). Using digital twins for managing change in complex projects. *Procedia Computer Science*, *229*, 1132–1140. https://doi.org/10.1016/j.procs.2024.03.147

Setiawan, C., & Amelia, P. (2024). Financial and efficiency performance before and after mergers and acquisitions in the Indonesian infrastructure industry. *Journal of Economics and Business*, *7*(1), 14–22.

Sheng, Z., Hertogh, M., Yuan, J., & Zhu, J. (2024). Guest editorial: Complex system management in mega infrastructure projects. *Engineering, Construction and Architectural Management*, *31*(9), 3453–3455. https://doi.org/10.1108/ECAM-09-2024-167

Shrestha, P. P., & Mahalingam, A. (2024). Deconstructing organizational capabilities of megaproject owners: Dimensions and levels. *Engineering, Construction and Architectural Management*, *30*(6), 1710–1730. https://doi.org/10.1108/ECAM-11-2022-1082

Silva, F., Mendes, L., & De Oliveira, C. (2024). Strategic inertia and renewal: Contrasting responses to market changes. *Journal of Business Research*, *167*. https://doi.org/10.1016/j.jbusres.2023.114512

Sopi, R., Yudha, R. A., & Nurhidayat, D. A. (2024). Digital transformation framework for contractors' projects: A comprehensive structured review. *International Journal of Construction Management*, *24*(3), 245–259. https://doi.org/10.1080/15623599.2023.2170098

Sorsa, M., & Dechassa, C. (2023). The effects of change management practice on organizational performance and factors affecting the success of change implementation – A systematic article review study. *Open Access Library Journal*, *10*, 1–18. https://doi.org/10.4236/oalib.1109647

Taheri, A., & Sobanjo, J. O. (2024). Civil Integrated Management (CIM) for advanced level applications to transportation infrastructure: A state-of-the-art review. *Journal of Infrastructure Systems*, *30*(1). https://doi.org/10.1061/(ASCE)IS.1943-555X.0000742

Talebi, S., Rezaei, F., & Yaghoubi, S. (2025). Guest editorial: Industry 4.0 and the future of infrastructure operation and maintenance. *Automation in Construction*, *164*. https://doi.org/10.1016/j.autcon.2025.105149

Thi Cao, T., & Ba Le, P. (2024). Impacts of transformational leadership on organizational change capability: a two-path mediating role of trust in leadership. *European Journal of Management and Business Economics*, *33*(2).

Tuli, G., & Naderpajouh, N. (2020). Uncovering the fragility of large-scale engineering project networks. *Reliability Engineering & System Safety*, *198*. https://doi.org/10.1016/j.ress.2020.106880

Tuominen, P., Ritala, P., & Aarikka-Stenroos, L. (2023). The wind of change: A dynamic managerial capabilities perspective on the role of marketing managers as strategic change agents. *Industrial Marketing Management*, *108*, 130–145. https://doi.org/10.1016/j.indmarman.2022.12.006

Van der Voet, J., & Vermeeren, B. (2023). Change management interventions: Taking stock and moving forward. *Human Resource Management Review*. https://doi.org/10.1016/j.hrmr.2023.100987

Vararean Cochisa, O., & Crisan, E. L. (2024). The digital transformation of the construction industry: A review. *Procedia Computer Science*, *230*, 543–550. https://doi.org/10.1016/j.procs.2023.12.069

Veenstra, L., Meijerink, J., & Bondarouk, T. (2024). Strategic communication in organizational change: Exploring the impact of two-sided messages. *International Journal of Management Studies*, *28*(2), 210–228. https://doi.org/10.1108/JCOM-08-2023-0071

Wahyuni, N., Santosa, P. B., & Aryani, L. (2023). Exploration of leadership and adaptation strategies to organizational change. . . *International Journal of Management Studies*, *10*(2), 85–

99.
Wang, Y., Li, J., & Zhang, R. (2024). Advanced informatic technologies for intelligent construction: A review. *Engineering Applications of Artificial Intelligence*, *132*, 106567. https://doi.org/10.1016/j.engappai.2024.106567
Wang, R., Samarasinghe, D. A. S., Skelton, L., & Rotimi, J. O. B. (2022). A Study of Design Change Management for Infrastructure Development Projects in New Zealand. *Buildings*, *12*(9), 1486. https://doi.org/10.3390/buildings12091486
Zahra, A., Fadillah, S., & Munir, M. (2025). A strategic change management in public institutions: Article review. *Journal of Public Administration and Policy Research*, *17*(1), 12–21.

***I Gusti Ngurah Putrawan (Corresponding Author)**
Department of Doctoral Management Science, Faculty of Economics and Business,
Universitas Mahasaraswati Denpasar
Address: Jalan Kamboja 11 A Denpasar, Bali, Indonesia
Email: ignputrawan05@gmail.com

**I Ketut Setia Sapta**
Department of Doctoral Management Science, Faculty of Economics and Business,
Universitas Mahasaraswati Denpasar
Address: Jalan Kamboja 11 A Denpasar, Bali, Indonesia
Email: ketutsetiasapta@unmas.ac.id

**I Nengah Aristana**
Department of Doctoral Management Science, Faculty of Economics and Business,
Universitas Mahasaraswati Denpasar
Address: Jalan Kamboja 11 A Denpasar, Bali, Indonesia
Email: aristana@unmas.ac.id

**Gede Cahyadi Putra**
Department of Doctoral Management Science, Faculty of Economics and Business,
Universitas Mahasaraswati Denpasar
Address: Jalan Kamboja 11 A Denpasar, Bali, Indonesia
Email: gdcahyadi@unmas.ac.id

**Vony Surya Chandra**
Department of Doctoral Management Science, Faculty of Economics and Business,
Universitas Mahasaraswati Denpasar
Address: Jalan Kamboja 11 A Denpasar, Bali, Indonesia
Email: vonysuryachandra79@gmail.com

**Choirul Nikmah**
Department of Technology Education Faculty of Science and Technology,
University of Science and Technology
Address: Pingtung, 91201, Taiwan
Email: p10922006@mail.npust.edu.tw