

**CAPITAL UNIVERSITY OF SCIENCE AND
TECHNOLOGY, ISLAMABAD**



**The Influence of Monitoring and Evaluation
Practices on Project Sustainability: Examining
the Mediating Role of Organizational Agility and
Moderating Effect of Stakeholder Engagement**

by

Hafiz Muhammad Mazhar Hussain

A thesis submitted in partial fulfillment for the
degree of Master of Science

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I sincerely dedicate this work to my parents for their unwavering support and encouragement throughout my journey. A special thank you to my friends for their invaluable assistance. I am also deeply grateful to my mentor for his inspiring guidance and supportive leadership, which has greatly influenced my path



CERTIFICATE OF APPROVAL

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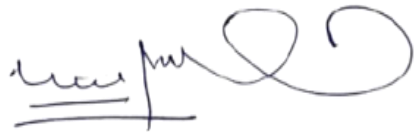
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Lastly, I wholeheartedly appreciate my parents for their unwavering moral and spiritual support, as well as their prayers for my success.

A handwritten signature in black ink, appearing to read 'Hafiz Muhammad Mazhar Hussain'. The signature is written in a cursive style with a large, decorative flourish at the end.

(**Hafiz Muhammad Mazhar Hussain**)

Abstract

Monitoring and Evaluation (M&E) practices play a key role in making projects sustainable, especially in complex industries like construction. This paper examines how M&E influences project sustainability, focusing on the role of organizational agility and stakeholder engagement. This working paper explores the relationships between M&E practices and project sustainability, emphasizing the mediating role of organizational agility and the moderating effect of stakeholder engagement. Utilizing existing literature and conceptual frameworks, the study highlights gaps in knowledge, including the limited integration of sustainability metrics within M&E systems. The findings offer a comprehensive perspective on how M&E can drive sustainable outcomes through enhanced adaptability and stakeholder collaboration.

Keywords: Monitoring and Evaluation, Project Sustainability, Organizational Agility, Stakeholder Engagement, Construction Industry

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Abbreviations

CI	Construction Industry
M&E	Monitoring and Evaluation
OA	Organizational Agility
PS	Project Sustainability
SE	Stakeholder Engagement

Chapter 1

Introduction

1.1 Background of the Study

The practice of Monitoring and Evaluation (M&E) has gained significant attention in project management due to its critical role in enhancing project sustainability. As projects become increasingly complex and stakeholders demand greater accountability and transparency, the importance of robust M&E systems cannot be overstated.

This section presents an in-depth review of how Monitoring and Evaluation (M&E) affects project sustainability, with a focus on the mediating role of organizational agility and the moderating influence of stakeholder engagement. In the building and construction industry, M&E practices seem to be overlooked, while other aspects of project management receive more attention. This neglect leads to a lack of emphasis on monitoring and evaluating the entire project process, ultimately impacting the successful completion of projects ([Callistus & Clinton, 2018](#)).

Key Performance Indicators (KPIs) are measurable standards used to assess a project's success in achieving its goals. Within M&E, KPIs offer a framework for evaluating different dimensions of project performance, such as efficiency, effectiveness, and impact (Okafor Afomachukwu, 2021). By using KPIs, project managers can gain insights into areas where the project is performing well and where improvements are needed. This data-driven approach enables more informed

decision-making and enhances the likelihood of achieving sustainable project outcomes (Parmenter, 2015). Evaluating the project's financial performance, including cost savings, return on investment, and economic growth, is critical (Hwang & Ng, 2013). Sustainability metrics also measure a project's effects on the environment, including resource usage, waste generation, and emissions (Balashov, 2023). Additionally, assessing contributions to social well-being, such as job creation, community development, and health improvements, is crucial (Dolcini et al., 2023).

The triple constraint, also known as the project management triangle, refers to the three primary constraints influencing project success: time, cost, and scope. These constraints are interdependent, meaning changes in one will inevitably impact the others. Effective management of the triple constraint is crucial for balancing project demands and achieving desired outcomes (David Maeri Onder, 2020).

The integration of M&E, KPIs, and the triple constraint provides a comprehensive framework for managing and sustaining projects. By continuously monitoring project activities and evaluating outcomes against predefined KPIs, project managers can ensure that the project remains on track concerning time, cost, and scope (Müller, Drouin, & Sankaran, 2017).

Key Performance Indicators (KPIs) are essential metrics used in monitoring and evaluation to measure performance aligned with business goals, fostering continuous improvement and achieving organizational objectives (Iffat, 2024). KPIs play a crucial role in construction project monitoring and evaluation, aiding project management decision-making. Commonly utilized KPIs include cost, time/schedule adherence, quality, client satisfaction, effective communication, safety, sustainable construction, end-user satisfaction, risk management, labor productivity, and profitability (Kunkcu et al., 2022).

These KPIs provide objective criteria for measuring success beyond the traditional "iron triangle" of time, cost, and quality, ensuring a comprehensive evaluation of project performance. By monitoring these KPIs, project managers can identify areas of improvement, track progress, make informed decisions, and enhance overall project efficiency and effectiveness (Hussain et al., 2022). Additionally, sustainability KPIs, such as renewable energy use and construction site safety, contribute

to advancing sustainable construction practices and aligning projects with environmental and socio-economic goals (Rajabi et al., 2022).

Monitoring and Evaluation Key Performance Indicators (KPIs) play a crucial role in enhancing the long-term sustainability of projects by assessing and improving their performance over time. Studies emphasize the significance of community participation in monitoring and evaluation processes to ensure project sustainability (Nalukwago et al., 2022). Identifying and assessing suitable KPIs for construction projects during the execution phase is essential for contractors to evaluate sustainability performance effectively (Sareh et al., 2022).

Additionally, the development of KPIs tailored to assess the sustainability performance of buildings transitioning into zero-carbon structures contributes to their long-term viability and resilience. By utilizing KPIs to measure factors such as beneficiary participation, project design, and renewable energy usage, organizations can enhance project ownership, commitment, and environmental impact, ultimately leading to sustained benefits and development within communities (Komninos et al., 2022).

Monitoring and Evaluation Key Performance Indicators (KPIs) also play a crucial role in influencing stakeholder engagement in various projects. Studies in Kenya have shown that effective monitoring and evaluation processes significantly impact stakeholder involvement (Kennedy et al., 2023). The involvement of stakeholders in the monitoring and evaluation process ensures transparency, accountability, and overall project success.

Research has indicated that stakeholder engagement is essential for tracking project progress, analyzing efficiency, and ensuring effectiveness during implementation (Alloice et al., 2023). Furthermore, the level of stakeholder participation has been found to moderate the link between monitoring and evaluation processes and the execution of projects, emphasizing the importance of stakeholder involvement in project success.

Additionally, stakeholders' active engagement in monitoring and evaluation processes has been linked to improved project performance and outcomes, highlighting the significance of their participation in decision-making and project assessment (Nicholas et al., 2021).

Monitoring practices involve the continuous tracking of key elements of project implementation performance—such as inputs (resources, equipment), activities, and outputs—through record-keeping and regular reporting. This process allows for the assessment of ongoing or completed projects to determine their actual impact against the planned impact concerning design, implementation, and results (Muchelule, 2017).

Monitoring and Evaluation (M&E) are essential components of effective project management, serving as tools for tracking progress, assessing outcomes, and facilitating informed decision-making. M&E practices enable project managers to identify potential issues early, make necessary adjustments, and ensure that project objectives are met within the allocated resources and timeframes (Crawford Bryce, 2003). Effective M&E not only enhances project performance but also contributes significantly to the sustainability of projects by ensuring that the benefits are maintained long after the project has been completed (World Bank, 2011).

M&E planning and staff training have positive and statistically significant effects on project outcomes, while information systems also positively influence construction project performance (Kissi et al., 2019). Globally, any organization's goal is to be effective, efficient, and successful, creating the need for regular project tracking to ensure optimal performance (Muhsin Ngugi, 2022).

Project sustainability refers to the capacity of a project to maintain its operations, outcomes, and benefits over the long term. It is a critical measure of a project's success, indicating that it can continue delivering value to its beneficiaries and stakeholders without requiring ongoing external support (Choi Sirakaya, 2006). Sustainable projects are resilient, adaptable, and capable of evolving in response to changing circumstances and environments.

Organizational agility is the ability of an organization to quickly adapt and respond to changes. It involves being innovative, flexible, and able to pivot strategies effectively. Agility is essential for staying competitive, engaging employees, and growing in unpredictable markets. It includes optimizing resources, promoting continuous improvement, and managing uncertainties. By being agile, organizations can navigate challenges, foster sustainable innovation, and maintain stability while being adaptable (Badran Khaled, 2023).

Monitoring and evaluation Key Performance Indicators (KPIs) play a crucial role in enhancing organizational agility in dynamic environments. By aligning KPIs with strategic objectives, organizations can track their performance and make informed decisions to adapt to changing circumstances (Thomas Nelsen, 2024). Utilizing data science metrics, such as accuracy, model performance, and Return on Investment (ROI), can provide valuable insights for evaluating the impact of data-driven initiatives on agility (Nejatian et al., 2019).

Additionally, identifying key agility indicators through systematic methodologies can help organizations prioritize and improve their strategic agility, ensuring sustained competitiveness in volatile markets. By effectively monitoring and evaluating KPIs related to strategic agility, organizations can enhance their adaptive capabilities and thrive in dynamic business environments (Muthuveloo Koay, 2023).

Project sustainability in construction projects refers to integrating sustainable practices into project management approaches to reduce environmental and social impacts. Sustainable project planning, which includes managerial control, risk response, and work consensus, plays a crucial role in predicting the performance of sustainable buildings and projects (Stanitsas Kirytopoulos, 2023).

Recent studies underscore the positive impact of M&E on project sustainability. For instance, Ika et al. (2012) found that projects with well-implemented M&E systems are more likely to achieve their intended outcomes and sustain their benefits over time. M&E provides a structured approach for continuous learning and improvement, allowing projects to adapt to new challenges and opportunities (Müller et al., 2017). Additionally, M&E helps ensure accountability, improves transparency, and fosters stakeholder trust, which are crucial for the long-term sustainability of projects (Kusek Rist, 2004).

Stakeholders' engagement is another critical factor influencing the effectiveness of M&E in promoting project sustainability. Stakeholders, including beneficiaries, funders, and local communities, play a vital role in the success of a project (Freeman, 1984).

Stakeholder engagement in construction projects significantly impacts project success and performance. Studies emphasize the importance of effectively involving

stakeholders such as owners, contractors, consultants, subcontractors, architects, government entities, and NGOs (Ebekozi et al., 2024). Effective stakeholder engagement involves actively engaging stakeholders throughout the project cycle, addressing their needs and expectations, and fostering their commitment to the project's objectives (Bourne, 2016).

Studies have shown that projects with strong stakeholder engagement are more likely to achieve sustainable outcomes (Aaltonen Kujala, 2010). Stakeholders provide valuable feedback, support resource mobilization, and enhance the project's legitimacy, all of which are crucial for sustainability (Eslerod Huemann, 2013).

By integrating M&E with the project cycle and stakeholders' engagement, projects can significantly enhance their sustainability. This integrative approach ensures that M&E practices are not conducted in isolation but are embedded within the broader project management framework. It allows for a more holistic understanding of project dynamics and facilitates the alignment of project activities with long-term sustainability goals (OECD, 2010).

In conclusion, the impact of M&E on project sustainability is profound, with the project cycle and stakeholders' engagement playing crucial mediating and moderating roles, respectively. Effective M&E practices, when integrated with a well-structured project cycle and robust stakeholder engagement, can ensure that projects not only achieve their immediate objectives but also sustain their benefits over the long term.

Future research should continue exploring these relationships and developing strategies to enhance the effectiveness of M&E in promoting project sustainability.

1.2 Research Gap

Monitoring and Evaluation (M&E) are commonly used to track project progress and ensure accountability. However, there's a significant lack of research on how these processes specifically impact the long-term sustainability of projects (Lamhauge & Nicolina, 2019). While many studies focus on how M&E improves project outcomes, they don't fully explore how M&E affects sustainability over

time. For instance, Naidoo (2011) discusses M&E's role in decision-making but doesn't delve deeply into its long-term impact on sustainability.

Most research on M&E is based on short-term observations. Since sustainability is about long-term impact, there is a need for studies that track M&E practices over extended periods to understand their ongoing effects on sustainability (Naidoo, 2011; Nyandika & Ngugi, 2014). This lack of long-term research leaves us uncertain about how M&E evolves and contributes to sustainability over time.

Additionally, existing studies often focus on specific sectors like public administration and infrastructure. This leaves a gap in understanding how M&E influences sustainability in other areas, such as construction projects. Research across different sectors could provide a broader view of M&E's role in fostering sustainability (Naidoo, 2011; Nyandika & Ngugi, 2014).

Organizational agility, which is the ability of an organization to adapt quickly to changes, might also play a crucial role in how effectively M&E processes are used. However, there's little research on how organizational agility influences the relationship between M&E and project sustainability (Irannejad, 2023). This gap means organizations may not know how to build agility to get the most out of M&E practices.

The effectiveness of M&E can vary depending on factors like the type of project or organizational culture, but these aspects are often overlooked. For example, while Nyandika and Ngugi (2014) discuss stakeholder participation, they don't consider how different contexts might change the impact of M&E on sustainability.

Stakeholder engagement is another important factor for project sustainability (Bal, Bryde, Fearon, & Ochieng, 2013), but there's limited research on how different stakeholder groups (e.g., internal vs. external, primary vs. secondary) affect sustainability outcomes. Understanding these diverse perspectives could help in managing stakeholders better to support M&E's impact on sustainability (Aaltonen & Kujala, 2016). Although stakeholder engagement is important, there's little research on how it can enhance the effectiveness of M&E in promoting sustainability. There's also a gap in identifying and evaluating effective stakeholder engagement

strategies that can improve project sustainability. While some studies have highlighted the importance of stakeholder engagement (Osobajo et al., 2023), there's a lack of comprehensive frameworks and evidence on which strategies work best.

Lastly, more research is needed on how M&E can be integrated with other project management strategies, like promoting organizational agility and engaging stakeholders. Without clear guidelines, project managers may struggle to align M&E with these broader strategies, which could lead to less effective sustainability outcomes.

1.3 Problem Statement

Monitoring and Evaluation systems often struggle to provide comprehensive data on long-term project outcomes, particularly regarding environmental, social, and economic sustainability. This makes it challenging to determine if a project supports sustainable development or just achieves short-term goals without considering broader impacts.

Projects often fail to fully integrate environmental considerations into M&E practices, which can lead to negative environmental impacts, such as pollution or resource depletion.

When M&E doesn't adequately capture the social effects of a project, it can result in outcomes that don't support social equity or community well being, potentially increasing social inequality.

Economic sustainability is also at risk when M&E focuses too much on short term financial success without considering long term economic impacts, such as job creation or future growth. This can make projects financially successful in the short term but unsustainable in the long run.

Another challenge understands how the ability of an organization to quickly adapt to changes affects sustainability through M&E. If an organization isn't agile, it might struggle to respond to environmental changes, social needs, or economic shifts, which can hurt the project's long term sustainability. This involves considering the needs and concerns of everyone affected by the project. However, it's

not always clear how stakeholder involvement influences the relationship between M&E and sustainability. This can result in projects that don't fully take into account the input from stakeholders, leading to less effective sustainability efforts. Overall, the main issues are related to the difficulty of measuring and promoting sustainability in all its aspects environmental, social, and economic while also understanding how organizational agility and stakeholder engagement play a role in this process. Addressing these challenges is important to ensure that projects not only achieve immediate success but also contribute to long-term sustainable development.

1.4 Research Questions

The study aims to provide answers to the following research questions:

RQ1:

Does monitoring practice have an impact on project sustainability in the construction industry?

RQ2:

Does evaluation practice have an impact on project sustainability in the construction industry?

RQ3:

Does organizational agility mediate the relationship between monitoring and evaluation practices and project sustainability?

RQ4:

Does stakeholder engagement moderate the relationship between monitoring and evaluation and project sustainability?

1.5 Research Objectives

This research aims to explore the effectiveness of monitoring and evaluation in achieving project sustainability in the construction industry. By investigating the

mediating role of organizational agility and the moderating effect of stakeholder engagement, this study seeks to provide insights into the optimal integration of monitoring and evaluation, organizational agility, and stakeholder engagement to enhance project sustainability outcomes.

The following are the research objectives:

RO1:

To investigate the impact of monitoring on project sustainability.

RO2:

To investigate the impact of evaluation on project sustainability.

RO3:

To investigate the mediating role of organizational agility in the relationship between monitoring and evaluation and project sustainability.

RO4:

To examine the moderating role of stakeholder engagement in the relationship between monitoring and evaluation and project sustainability.

1.6 Significance of the Study

This study aims to advance the theoretical understanding of sustainable project management by investigating the impact of monitoring and evaluation on project sustainability. Previous research has highlighted the importance of values and principles in shaping project outcomes (Turner & Müller, 2005). However, there is a lack of empirical studies examining the specific effects of monitoring and evaluation on sustainability outcomes. By addressing this gap, this study contributes to the literature on project management and sustainability, offering new insights into how values and principles can be integrated into project practices to enhance sustainability. Additionally, this study explores the mediating role of organizational agility and the moderating effect of stakeholder engagement, which are under-researched areas in the existing literature. Understanding these mechanisms is crucial for developing a comprehensive theoretical framework that explains how

and why monitoring and evaluation influences project sustainability. This theoretical contribution is expected to enrich the existing body of knowledge and provide a foundation for future research in this area.

For project managers and practitioners, the findings of this study will offer practical guidance on implementing monitoring and evaluation approaches to achieve sustainability goals. By demonstrating the positive impact of monitoring and evaluation on project sustainability, the study encourages project managers to align their project activities with organizational values and principles. This alignment can lead to more sustainable project outcomes, contributing to long-term organizational success and societal well-being (Metz, Kainz, & Boaz, 2023).

The investigation of stakeholder engagement as a moderating factor highlights the importance of effective stakeholder engagement in achieving project sustainability. By understanding how stakeholder engagement can enhance the impact of monitoring and evaluation, project managers can develop strategies to involve stakeholders more effectively, ensuring their support and participation in sustainability initiatives (Ignaim & Fernandes, 2023). This practical guidance is particularly relevant in contexts where stakeholder expectations and interests are diverse and complex.

The findings of this study have important implications for policymakers and organizations aiming to promote sustainable project management practices. By providing empirical evidence on the benefits of monitoring and evaluation, the study supports the development of policies and guidelines that encourage organizations to integrate values and principles into their project management frameworks. Policymakers can use these insights to design interventions and incentives that promote sustainable project management practices across different sectors.

Additionally, the study's focus on the mediating role of organizational agility and the moderating effect of stakeholder engagement provides a nuanced understanding of the factors that influence project sustainability. This understanding can inform the development of targeted policies that address specific challenges and opportunities at different stages of the project life cycle and in stakeholder management practices. While monitoring and evaluation have been studied in various contexts, there is limited research on their impact on project sustainability in

Pakistan. This study addresses this gap by examining the unique cultural, economic, and organizational factors that characterize Pakistani projects. By doing so, the study provides context-specific insights that are valuable for practitioners and policymakers in Pakistan.

The findings can help Pakistani organizations understand how to implement monitoring and evaluation approaches effectively and navigates the challenges associated with integrating sustainability principles into project management practices. Additionally, the study's focus on stakeholder engagement is particularly relevant in Pakistan, where stakeholder dynamics can be complex and multifaceted.

In conclusion, this study's significance lies in its potential to advance theoretical understanding, provide practical guidance, and inform policy development in the field of sustainable project management. By investigating the impact of monitoring and evaluation on project sustainability, with a focus on the mediating role of organizational agility and the moderating effect of stakeholder engagement, the study addresses critical gaps in the existing literature and offers valuable insights for researchers, practitioners, and policymakers.

1.7 Dynamic Capability Theory

Dynamic capability theory refers to an organization's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments ([Gonzalez-Samaniego, Valenzo-Jimenez, Martinez-Arroyo, & Valencia, 2023](#)).

This theory has evolved to highlight the role of strategic innovation and resource management in driving sustainable growth. Its key elements include adapting to change, exploring new knowledge, and effectively managing resources to gain a competitive edge in unpredictable markets ([Kodama, 2024](#)). Dynamic capability theory evaluates organizational effectiveness through various key performance indicators (KPIs) that reflect the ability to adapt and innovate in changing environments. The literature identifies several dimensions and their relationships with performance outcomes, providing a framework for measurement and analysis ([Garrido, Kretschmer, Vasconcellos, & Gonçalo, 2020](#)). Dynamic capability

theory can indeed be utilized to predict a firm's long-term sustainability and competitiveness. This theory emphasizes the ability of firms to adapt, integrate, and reconfigure internal and external competencies to address rapidly changing environments. The following sections elaborate on how dynamic capabilities contribute to sustainability and competitive advantage.

Firms that develop sustainable dynamic capabilities can achieve environmental and social performance, which are essential for long-term sustainability (Bhadra, Kamalanabhan, & Singh, 2024). Monitoring and evaluation (M&E) frameworks grounded in dynamic capability theory can effectively enhance a firm's long-term sustainability by fostering adaptability and continuous improvement. According to (Teece, 2007), dynamic capabilities enable organizations to sense opportunities and threats, seize these opportunities, and reconfigure internal resources to adapt to changing environments. When M&E frameworks are aligned with these capabilities, firms can more accurately forecast their sustainability by systematically assessing their strategic initiatives and adapting their processes accordingly (Eisenhardt & Martin, 2000).

For instance, an M&E system that emphasizes adaptive learning allows firms to identify emerging trends and adjust their strategies to maintain a competitive edge (Barreto, 2010). By leveraging real-time data, these frameworks can evaluate the effectiveness of current strategies, enabling organizations to reallocate resources efficiently and respond to market volatility (Wang & Ahmed, 2007). This proactive approach ensures that firms not only survive but thrive in uncertain environments by continuously evolving their capabilities. Thus, integrating dynamic capabilities into M&E frameworks helps firms anticipate future challenges and align their strategic objectives with sustainable growth, thereby enhancing their long-term resilience and performance (Ambrosini & Bowman, 2009).

Furthermore, organizational agility, which refers to the ability of an organization to quickly adapt to changes in the environment, can be viewed as a strategic capability that mediates the relationship between M&E and project sustainability. Agile organizations are better positioned to leverage their internal resources effectively. A 2024 study found that organizational agility mediates the relationship between technology management and quality performance, emphasizing agility's

role in translating feedback into operational improvements that support sustainability.

A recent study highlighted that organizations with high agility could bridge gaps in operational inefficiencies identified through M&E, leading to improved sustainability outcomes (Fangqi, Irfan, & Baloch, 2023).

Strategic agility enables organizations to respond to M&E findings dynamically, linking digital transformation to enhanced sustainability outcomes, even in volatile environments (Rawashdeh, Abdallah, Alfawaer, Al Dweiri, & Al-Jaghbeer, 2024). Building on the theory of dynamic capability, the present research makes a strong argument that strategic agility is a key component in managing continuous change effectively (Rawashdeh et al., 2024), responding to challenges and opportunities in a way that sustains project outcomes over time (Teece, 2007).

Stakeholder engagement, which moderates the impact of M&E on project sustainability, is another critical resource. Engaging stakeholders effectively ensures that their insights, needs, and concerns are addressed, leading to more robust and sustainable project outcomes. By aligning the interests of various stakeholders with the organization's strategic goals, firms can enhance the value derived from their internal resources (Freeman, 1984).

Dynamic capability theory provides a useful framework for understanding the role of Monitoring and Evaluation in promoting project sustainability. By considering M&E as a valuable, rare, inimitable, and non-substitutable resource, organizations can leverage these practices to achieve a competitive advantage and ensure the long-term success of their projects.

Chapter 2

Literature Review

In the modern business environment, the sustainability of projects has emerged as a critical concern for organizations. Project sustainability not only ensures long-term success but also aligns with broader environmental and social goals. This literature review aims to explore the impact of the value-driven matrix on project sustainability, the role of the project life cycle, and the moderating effect of stakeholder management.

2.1 Impact of Monitoring and Evaluation on Project Sustainability

Project sustainability has become a critical objective in contemporary project management. It extends beyond traditional measures of project success, such as time, cost, and scope, to include environmental, social, and economic considerations ([Ahmet & Abdurrahman Yagmur, 2024](#)). Monitoring and evaluation Key Performance Indicators (KPIs) play a crucial role in influencing project sustainability through resource allocation and utilization.

Studies have shown that monitoring and evaluation practices significantly impact the sustainability of donor-funded projects, with a positive correlation between monitoring and evaluation and project sustainability (Projahnmo Abdul Qudratullah, 2022). Additionally, partnerships in monitoring and evaluation have been found to promote beneficiaries' awareness of project objectives and create a sense

of ownership, leading to long-term sustainability (Andrew Rucyahana Mpuhwe, 2024).

Furthermore, continuous process improvement through project monitoring and evaluation in manufacturing settings has been highlighted as a method to enhance overall manufacturing performance and ensure sustainable manufacturing systems (Samson, 2023).

Project sustainability refers to the capacity of a project to deliver long-term benefits that go beyond immediate outputs and outcomes. It encompasses environmental stewardship, social responsibility, and economic viability. Sustainable projects aim to minimize negative environmental impacts, promote social equity, and ensure economic efficiency (Silvius & Schipper, 2020).

Traditionally, project success has often been measured solely by factors like cost, schedule, and scope. However, a growing focus on environmental and social responsibility necessitates the integration of sustainability considerations into project management (Neseth Forkéus & Grönlund, 2018).

- **H1:** Monitoring has a positive effect on project sustainability.
- **H2:** Evaluation has a positive effect on project sustainability.

2.2 Impact of Monitoring and Evaluation on Organizational Agility

The impact of Monitoring and Evaluation (M&E) KPIs on organizational agility is a crucial area of study, as it highlights how systematic tracking and assessment of performance metrics can enhance an organization's ability to respond to changing environments. Organizational agility refers to the capability of a company to quickly adjust its strategies and operations in response to external and internal changes (Doz & Kosonen, 2010).

Recent literature emphasizes that well-designed M&E KPIs significantly contribute to agility by providing timely and relevant information that informs decision-making. M&E KPIs provide critical data that enable organizations to assess their

performance accurately and promptly. This data-driven approach helps in making swift decisions based on real-time information rather than relying on intuition or outdated information. For example, Kohtamäki, Parida, Oghazi, Gebauer, and Baines (2019) highlight that organizations leveraging real-time data from KPIs can more rapidly identify market shifts and adjust their strategies accordingly, thereby enhancing agility.

M&E KPIs also help organizations monitor potential risks and challenges. By identifying these issues early, companies can take proactive measures to mitigate risks, which is a key aspect of agility. For instance, Pal, Torstensson, and Mattila (2014) argue that continuous monitoring through KPIs allows organizations to anticipate disruptions and adapt their processes to maintain continuity, which is a critical factor in sustaining organizational agility.

The continuous tracking of KPIs fosters a culture of learning and improvement within organizations. This culture is essential for agility, as it encourages employees to regularly reflect on performance outcomes and innovate solutions. As noted by Shams, Vrontis, Weber, and Tsoukatos (2021), the iterative process of evaluating KPIs and adapting strategies based on the findings helps organizations become more responsive to changes in their internal and external environments.

M&E KPIs provide a clear picture of where resources are being effectively utilized and where they may be lacking. This insight allows organizations to reallocate resources swiftly in response to changing priorities or market demands. This capability is critical for maintaining organizational agility, as noted by Appelbaum, Calla, Desautels, and Hasan (2017), who emphasize the role of resource reallocation in enabling agile responses to dynamic market conditions. Clear and well-communicated KPIs ensure that all organizational members understand the current performance status and the areas needing attention. This transparency fosters better collaboration and coordination, which are essential for agile responses. As De Smet, Lurie, and St. George (2018) suggest, transparent communication of KPIs can break down silos within organizations, facilitating quicker and more cohesive responses to changes.

- **H3:** Monitoring has a positive influence on organizational agility.
- **H4:** Evaluation has a positive influence on organizational agility.

2.3 Impact of Organizational Agility on Project Sustainability

Organizational agility enables companies to swiftly adjust project plans and strategies in response to unforeseen challenges or opportunities. This adaptability is critical for maintaining the relevance and feasibility of projects over time.

Agile organizations are better equipped to identify, assess, and mitigate risks throughout the project lifecycle. By being proactive and responsive, these organizations can implement contingency plans and pivot strategies as needed to address emerging risks. This capability reduces the likelihood of project failures and enhances the likelihood of achieving sustainable outcomes (Bredillet, Tywoniak, & Tootoonchy, 2018).

Agility allows organizations to reallocate resources quickly and efficiently in response to changing project needs. This flexibility ensures that resources are used optimally, reducing waste and promoting sustainability. For example, when faced with budget constraints or resource shortages, agile organizations can re-prioritize tasks and redistribute resources to critical areas, thus maintaining project momentum and sustainability (Patanakul, Kwak, & Anbari, 2020).

An agile approach encourages a culture of continuous improvement and innovation, which is essential for the long-term sustainability of projects. Agile organizations regularly review and refine their processes and deliverables, ensuring that projects evolve to meet stakeholder needs and market demands. This iterative process helps in delivering sustainable solutions that are adaptable to future changes (Teece, Peteraf, & Leih, 2016).

Agile organizations prioritize frequent communication and collaboration with stakeholders, ensuring that their needs and expectations are continuously addressed. This engagement fosters trust and satisfaction, which are critical for the sustained support and success of projects. By being responsive to stakeholder feedback, agile organizations can make necessary adjustments to project deliverables, enhancing their sustainability (Matos Lopes, 2013).

- **H5:** Organizational agility has a positive effect on project sustainability.

2.4 Mediating Role of Organizational Agility in the Relationship Between Monitoring and Evaluation and Project Sustainability

Organizational agility plays a crucial mediating role in the relationship between monitoring and evaluation (M&E) practices and project sustainability. Monitoring and Evaluation (M&E) practices have evolved as crucial components of development approaches worldwide, aiming to enhance project ownership, empowerment, and mutual benefits within communities (Nalukwago Hellen et al., 2022).

Organizational agility plays a crucial mediating role in the relationship between monitoring and evaluation (M&E) practices and project sustainability.

Monitoring and Evaluation (M&E) practices have evolved as crucial components of development approaches worldwide, aiming to enhance project ownership, empowerment, and mutual benefits within communities (Nalukwago Hellen et al., 2022).

Studies emphasize the significance of agility in adapting to changing conditions and following innovations timely to maintain quality and excellence, especially in turbulent environments like the telecommunications sector in Jordan (Özkan Hasan & Murat Adil Salepçioğlu, 2022).

Additionally, agility is identified as a lead predictor of operational performance, with sustainability acting as a mediator between agility and operational success in the oil and gas sector of Pakistan.

The interplay between M&E practices, organizational agility, and sustainability is vital for enhancing project ownership, empowerment, and long-term sustainability, underscoring the importance of incorporating agility into M&E frameworks for sustainable project outcomes (Saeed Sadia et al., 2022).

- **H6:** Organizational agility mediates the relationship between monitoring and project sustainability.
- **H7:** Organizational agility mediates the relationship between evaluation and project sustainability.

2.5 Moderating Role of Stakeholder Engagement in the Relationship Between Monitoring and Evaluation and Project Sustainability

The necessity for businesses to stay agile, prioritize sustainable quality, and embrace innovation to cope with changing conditions and maintain quality is emphasized. Businesses must adapt to changing conditions, and the study highlights the importance of organizational agility and sustainable quality perception for organizational success (Özkan Hasan & Murat Adil Salepçioğlu, 2022).

The importance of beneficiary involvement in project activities is highlighted, focusing on how participation, role assignment, shared decision-making, and post-project engagement contribute to project ownership and commitment, ultimately improving sustainability.

Post-project engagement with beneficiaries is essential for maintaining their interest, involvement, and commitment to the project, thereby ensuring its long-term sustainability (Nalukwago Hellen et al., 2022).

Monitoring and Evaluation (M&E) practices have evolved over time to become essential components of development approaches worldwide, focusing on enhancing project ownership, empowerment, and mutual benefits within communities. The concept of sustainability in projects involves understanding the relationship between social responses and the environment, drawing inspiration from community participation (Nalukwago Hellen et al., 2022). Stakeholder engagement also moderates the mediation effect of the project life cycle in the relationship between the value-driven matrix and project sustainability (Bourne, 2016). Bourne (2016) emphasizes that stakeholder management practices can amplify the positive impact of a value-driven matrix on project sustainability by ensuring that stakeholder concerns are addressed throughout the project life cycle. This creates a supportive environment for implementing sustainable practices and achieving long-term project success. Beneficiary involvement in project activities—emphasizing participation, role assignment, shared decision-making, and post-project engagement—contributes significantly to project ownership and commitment, improving

sustainability. Continuous engagement post-project fosters sustained interest and commitment (Nalukwago Hellen et al., 2022).

Stakeholder engagement is a critical element of sustainable project management, as it ensures that diverse perspectives, interests, and feedback are incorporated into project processes and outcomes (Freeman, 1984). When integrated as a moderating factor, stakeholder engagement amplifies the effectiveness of M&E in achieving project sustainability.

Monitoring and evaluation systems provide data-driven insights into project performance, risks, and outcomes. They are instrumental in identifying gaps and opportunities for improvement, aligning project activities with sustainability goals (Naidoo, 2011). However, the impact of M&E on sustainability is contingent upon how well stakeholders are engaged to interpret and act on these insights.

Stakeholder engagement involves actively involving project stakeholders in decision-making, resource allocation, and problem-solving processes (Aaltonen & Kujala, 2016). Engaged stakeholders provide unique insights, local knowledge, and support, which enhance the relevance and applicability of M&E findings to sustainability efforts. For instance, involving community members in evaluating environmental impacts ensures that sustainability measures are contextually appropriate. Stakeholder engagement moderates the relationship between M&E and project sustainability by ensuring that the insights derived from M&E are actionable and broadly supported. Without stakeholder engagement, M&E findings may fail to gain the necessary buy-in or encounter resistance during implementation (Nyandika & Ngugi, 2014). Engaged stakeholders can also advocate for the adoption of sustainable practices, bridging the gap between M&E outcomes and practical execution.

Recent studies emphasize that stakeholder collaboration enhances transparency, accountability, and the long-term viability of projects, particularly in complex environments such as infrastructure development and public service delivery (Ferreira, Morgado, & Lins, 2024). These findings underline the critical role of stakeholder engagement in operationalizing sustainability goals derived from M&E processes. The moderating role of stakeholder engagement in the relationship between monitoring and evaluation (M&E) and project sustainability is significant, as evidenced

by various studies. Effective stakeholder engagement enhances the M&E process, leading to improved project outcomes and sustainability.

A study by [Amina and Ngugi \(2022\)](#) shows that stakeholder engagement in M&E activities strengthens relationships among stakeholders, addressing agency issues and enhancing evidence-based decision-making, which ultimately contributes to improved project impact and sustainability in international development projects.

M&E activities serve multiple functions, such as collecting data on inputs, outputs, outcomes, and overall impact. This data is crucial for stakeholders to make informed, evidence-based decisions that enhance project effectiveness. The study finds that M&E strengthens stakeholder relationships by involving them at different project stages, which helps identify community needs and demonstrates positive impacts on the community. Amin Humera et al (2023) in the M&E process. Engaging these stakeholders is essential for identifying community needs and ensuring that projects are aligned with those needs ([Amina & Ngugi, 2022](#)).

- **H8:** Stakeholder engagement moderates the relationship between monitoring and project sustainability.
- **H9:** Stakeholder engagement moderates the relationship between evaluation and project sustainability.

2.6 Research Model

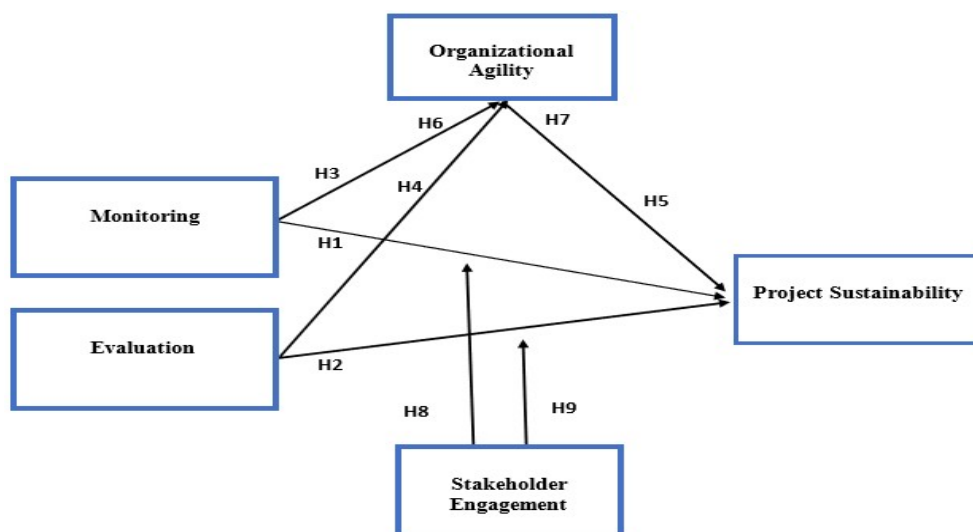


FIGURE 2.1: Framework of Research

H1: Monitoring has a positive effect on project sustainability.

H2: Evaluation has a positive effect on project sustainability.

H3: Monitoring has a positive influence on organizational agility.

H4: Evaluation has a positive influence on organizational agility.

H5: Organizational agility has a positive effect on project sustainability.

H6: Organizational agility mediates the relationship between monitoring and project sustainability.

H7: Organizational agility mediates the relationship between evaluation and project sustainability.

H8: Stakeholder engagement moderates the relationship between monitoring and project sustainability.

H9: Stakeholder engagement moderates the relationship between evaluation and project sustainability.

Chapter 3

Research Methodology

This methodology section outlines the research design, target population, sample, variable measurements, data collection methods, and analytical tools employed. These elements are discussed within the framework used to explore the relationship between Monitoring and Evaluation (M&E) and Project Sustainability, incorporating Organizational Agility as mediators and Stakeholder Engagement as a moderating variable.

3.1 Research Philosophy

Positivism

Positivism is the philosophical approach used in this investigation. It asserts that data is only reliable if it is factual and obtained through observation and measurement. In positivist research, the investigator focuses on collecting data and interpreting it without bias.

3.2 Research Approach

Hypothetical-Deductive

This study adopts a hypothetico-deductive approach, drawing on existing literature and theoretical frameworks to formulate hypotheses that are subsequently

tested through empirical investigation. Quantitative analysis techniques are employed to examine the relationships between variables and uncover underlying connections.

3.3 Research Design

Quantitative Research

The study uses quantitative research design, chosen for its perceived scientific rigor and structured methodology. This design involves clearly defining variables and hypotheses before data collection begins.

3.4 Time Horizon

Cross-Sectional Survey

The current research study adopts a cross-sectional design, with data collected on a single occasion to evaluate the proposed hypotheses and assess the causal relationships among various constructs, including independent variables, dependent variables, as well as mediators and moderators.

3.5 Unit of Analysis

Construction-Based Project Organization Team Members

The unit of analysis refers to the level at which data is aggregated for analysis. In this study, data will be collected from employees and supervisors in construction project-based organizations across major areas of Islamabad and Rawalpindi. Both managers and employees from various private organizations will provide the data.

3.6 Sampling Technique

Convenience Sampling Technique

Convenience sampling was chosen as the sampling method due to constraints like limited resources and time.

This technique allows for easier and more practical data collection under these conditions.

3.7 Population

The target population for this study includes employees in project-based organizations within the construction industry in both the public and private sectors.

The study focuses on the value of project sustainability in construction project-based organizations located in Rawalpindi and Islamabad, as these organizations were selected for their high relevance and potential contribution to the research objectives.

3.8 Sample Size

The sample size will be greater than 384, determined using Cochran's formula for appropriate sample size in surveys (James E. Bartlett, 2000).

The Cochran Formula was employed to calculate the sample size. This method achieves a balance between the need for comprehensive insights and the practical constraints of the study.

By using this formula, a well-selected sample was obtained, representing a diverse cross-section of the target population and enhancing the reliability and generalizability of the findings.

3.9 Demographics Data Result

The questionnaire for this study was divided into sections to gather data on age, gender, experience, and education. Participants were professionals from construction based project organizations. Below is a simplified breakdown of the sample characteristics:

3.9.1 Gender

In the context of the survey, gender was an essential factor for understanding the composition of the respondents and any potential influences on the results. According to the results shown in Table 3.1, 78.7 percent of the respondents identified as male, while 21.3 percent identified as female.

TABLE 3.1: Gender Distribution

Gender	Frequency	Percent
Female	83	21.3
Male	307	78.7
Total	390	100.0

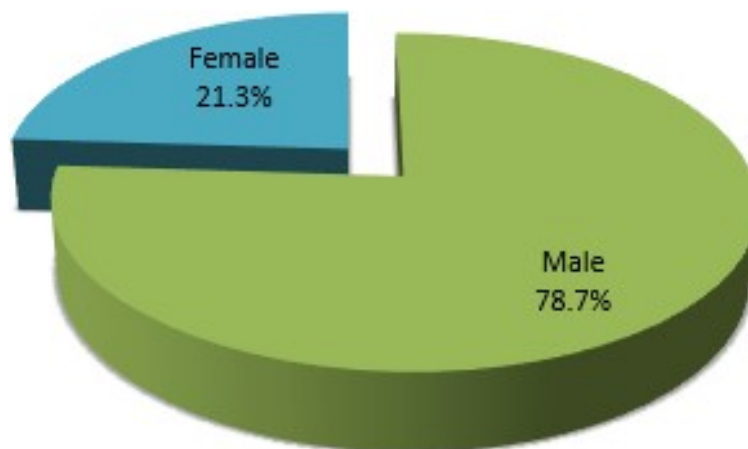


FIGURE 3.1: Gender Distribution

3.9.2 Distribution of Age

Out of the total sample of 390 individuals, 164 respondents (42.1%) were aged between 18 and 25, representing the largest age group. The next largest group consisted of those aged 26 to 33, with 137 participants making up 35.1% of the sample. Respondents aged 34 to 41 accounted for 46 individuals (11.8%), while 23 participants (5.9%) fell within the 42 to 49 age range. Finally, 20 respondents, representing 5.1% of the sample, were aged 50 and above. Table 3.2 provides a comprehensive breakdown of respondents by age group.

TABLE 3.2: Distribution of Age

Age	Frequency	Percent
18-25	164	42.1
26-33	137	35.1
34-41	46	11.8
42-49	23	5.9
50-above	20	5.1
Total	390	100.0

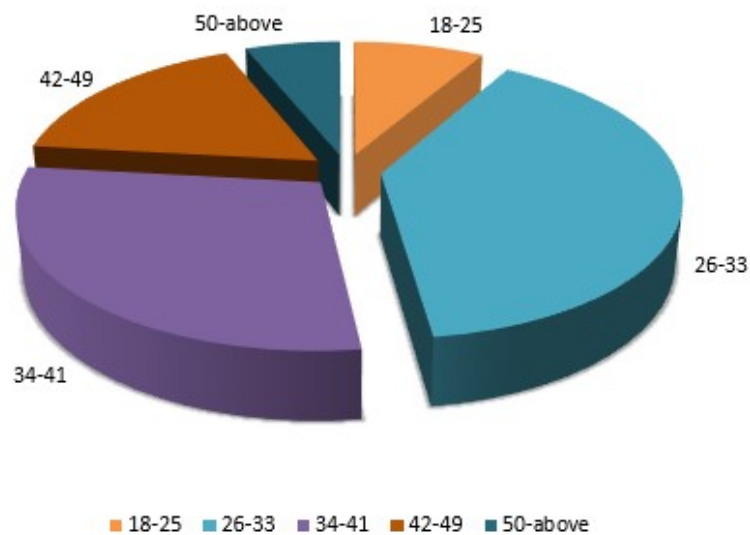


FIGURE 3.2: Age Distribution

3.9.3 Qualification

Qualifications, which refer to the educational achievements or skills that make someone suitable for a job or task, are a key part of the demographic data. Table 3.4 provides an overview of the respondents' educational backgrounds.

The majority, 208 respondents (53.3%), held a Master's degree, while 79 respondents (20.3%) had a Bachelor's degree. A total of 76 individuals (19.5%) had an MS/M.Phil., and 15 respondents (3.8%) held a Ph.D. Only 6 respondents each (1.5%) had a Matric or FA/FSc qualification.

TABLE 3.3: Respondent Qualification

Qualification	Frequency	Percent
Bachelor	79	20.3
FA/Fsc	6	1.5
Master	208	53.3
Matric	6	1.5
MS/M.Phil	76	19.5
PhD	15	3.8
Total	390	100.0

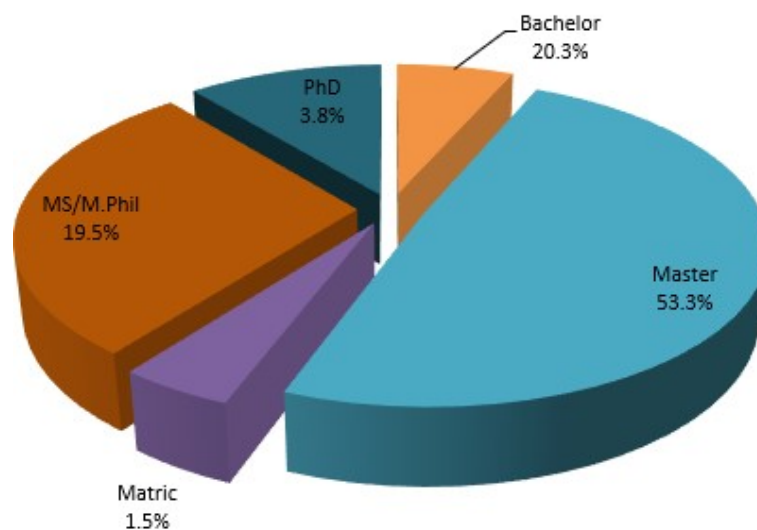


FIGURE 3.3: Qualifications of Respondent

3.9.4 Respondents' Experience

The respondents' experience is an important demographic factor. Among the 390 participants, the majority, 210 respondents (53.8%), had 5 years or less of experience.

Another 122 respondents (31.3%) reported 6 to 13 years of experience. Those with 14 to 21 years of experience totaled 34 (8.7%), while 20 respondents (5.1%) had 22 to 29 years of experience. Only 4 respondents (1.0%) had 30 years or more of experience.

TABLE 3.4: Distribution of Respondents' Experience

Experience	Frequency	Percent
14-21	34	8.7
22-29	20	5.1
30-above	4	1.0
5 and Less	210	53.8
6-13	122	31.3
Total	390	100.0

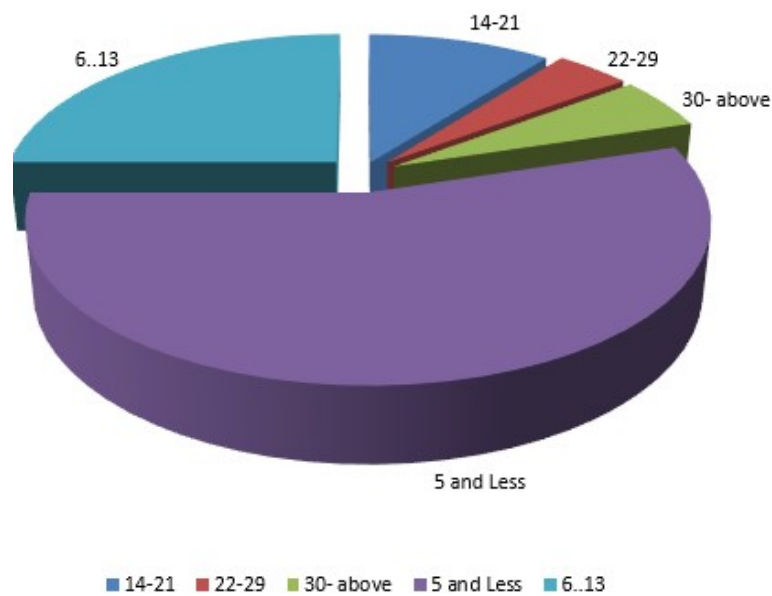


FIGURE 3.4: Respondents' Experience

3.10 Measurement Instrument

All measures will be assessed using a seven-point Likert scale ranging from 1 = Strongly Disagree to 7 = Strongly Agree.

3.10.1 Monitoring and Evaluation

Monitoring & Evaluation will be measured using a 10-item questionnaire referenced by [Kissi et al. \(2019\)](#).

3.10.2 Organizational Agility

Organizational Agility will be measured using a 5-item questionnaire in which participants rated each item from 1 (Strongly Disagree) to 7 (Strongly Agree). This scale is referenced by Goldman, Nagel, & Preiss, 1995, and and Tsourveloudis et al, 1999.

3.10.3 Project Sustainability

This study will use a 9-item questionnaire to measure Project Sustainability, as referenced by A.J. Gilbert Silvius et al., 2017.

3.10.4 Stakeholder Engagement

Stakeholder Engagement will be measured using a 7-item scale referenced by Ronald K. Mitchell et al., 1997, Olander & Landin, 2005, and Pinto et al., 2009.

3.11 Data Analysis Tool

Statistical software SPSS version 26 and SMART PLS4 (Structural Equation Modeling (SEM). is used for data analysis.

3.12 Scale Summary

TABLE 3.5: Scale Summary

Constructs	Reference	No.of Items
Monitoring & Evaluation	ErnestKissi etal 2019	10
Organizational Agility	Goldman,Nagel, & Preiss,1995 TsourveloudiTsourveloudis et al ,1999)	05
Project Sustainability	Gilbert Silvius et al 2017	09
Stakeholder Engagement	RonaldK.Mitchelletal., 1997 (Olander Landin,2005) Pinto et al., 2009	07

3.13 Statistical Analysis Procedure

The study used SPSS 26 and examined the relationships between the constructs in the theoretical framework. Various statistical analyses were performed, including demographic analysis, descriptive statistics, reliability analysis, correlation analysis, and regression analysis. Closed-ended questionnaires were distributed through Google Forms and 391 responses were received and were fully completed and used for analysis.

Chapter 4

Result and Analysis

4.1 Techniques for Data Analysis

During the analysis, data were collected from a sample of 390 respondents and were selected for evaluation. Statistical analysis was conducted using SPSS version 26 and SMART PLS4 (Structural Equation Modeling (SEM)).

The following steps were considered during the data examination:

1. Data was collected from a sample of 390 respondents, with 390 properly complete questionnaires selected for analysis.
2. SPSS software version 26 and SMART PLS4 were utilized for data analysis.
3. Properly filled questionnaires were selected for analysis.
4. Each variable's questionnaire was analyzed.
5. Sample characteristics were explored using frequency tables.
6. Descriptive statistics were calculated using numerical values.
7. Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and discriminant validity was used to assess reliability.
8. Correlation Analysis conducted to identify significant positive relationships among variables.

9. The measurement model and structural model were analyzed using SMART PLS4.

4.2 Descriptive Statistics

Descriptive statistics offer detailed insights into the collected data, including measures like mean, median, standard deviation (SD), and the number of questionnaires analyzed. The mean, or average, reflects the level of agreement or disagreement among respondents, with higher values indicating stronger agreement and lower values signifying stronger disagreement. The SD measures the variability or spread of responses around the mean, showing how consistent the responses are.

Table highlights the primary data for the variables.

TABLE 4.1: Descriptive Statistics

Variables	Min.	Max.	Mean	Std. Deviation
Monitoring	1	5	4.1231	.57159
Evaluation	1	5	4.2077	.54517
Project Sustainability	1	5	4.1798	.48969
Stakeholder Engagement	1	5	4.1601	.52787
Organizational Agility	1	5	4.1262	.59222

The minimum and maximum values, alongside the mean and standard deviation for each variable, were analyzed for the sample of 390 participants.

Monitoring recorded a mean value of 4.1231 with a standard deviation of 0.57159, indicating consistent agreement among participants about its significant role in ensuring sustainable project outcomes. Similarly, Evaluation displayed a higher mean of 4.2077 with a standard deviation of 0.54517, reflecting a strong consensus on its importance in the sustainability process.

Project Sustainability had a mean value of 4.1798 and a standard deviation of 0.48969 shows a high level of agreement among participants on the key factors that promote sustainable practices within projects. Additionally, Stakeholder Engagement was rated with a mean of 4.1601 and a standard deviation of 0.52787.

Lastly, Organizational Agility reported a mean value of 4.1262 and a standard deviation of 0.59222, underscoring its importance in adapting to challenges and maintaining sustainability in dynamic project environments.

4.3 Analysis of Correlation

Correlation analysis is a statistical technique used to explore the relationships between variables. This study examines the connections among Monitoring, Evaluation, Project Sustainability, Stakeholder Engagement, and Organizational Agility, with a focus on their combined impact on project sustainability. The analysis evaluates the strength and direction of these relationships using Pearson's correlation coefficient, which ranges from -1.0 to +1.0.

A positive coefficient above zero indicates a strong, direct relationship, meaning both variables move in the same direction. Conversely, a negative coefficient signifies an inverse relationship, where one variable increases as the other decreases. Values close to zero suggest little to no relationship between the variables.

TABLE 4.2: Correlations

	M	E	PS	SE	OA
Monitoring	1				
Evaluation	.686**	1			
Project Sustainability	.742**	.727**	1		
Stakeholder Engagement	.665**	.608**	.712**	1	
Organizational Agility	.584**	.652**	.705**	.649**	1

** . Correlation is significant at the 0.01 level (2-tailed).

For this study ($N = 390$), significant correlations at the 0.01 level (2-tailed) were observed, as presented in Table. Monitoring and Evaluation show a positive and significant correlation ($r = .686, p < 0.01$), indicating that improvements in monitoring are strongly associated with better evaluation practices.

Monitoring also has a significant positive relationship with Project Sustainability ($r = .742, p < 0.01$). The correlation between Monitoring and Stakeholder Engagement is positive and significant ($r = .665, p < 0.01$), highlighting the importance of monitoring in enhancing stakeholder collaboration.

A strong positive association is observed between Monitoring and Organizational Agility ($r = .584, p < 0.01$), suggesting that effective monitoring contributes to organizational adaptability.

Evaluation exhibits a significant positive correlation with Project Sustainability ($r = .727, p < 0.01$) and Stakeholder Engagement ($r = .608, p < 0.01$), reflecting its integral role in improving these aspects.

Evaluation and Organizational Agility also demonstrate a strong positive relationship ($r = .652, p < 0.01$). Project Sustainability shows significant positive correlations with Stakeholder Engagement ($r = .712, p < 0.01$) and Organizational Agility ($r = .705, p < 0.01$).

Stakeholder Engagement and Organizational Agility maintain a significant positive association ($r = .649, p < 0.01$).

4.4 Structured Equation Modeling

The study employed the PLS-SEM (Partial Least Squares-Structural Equation Modeling) approach using Smart PLS software. This method involves analyzing two key models: the measurement model and the structural model. Statistical analyses included reliability, factor loading, correlation, regression, path analysis for mediation, and a moderation test.

4.4.1 Measurement Model

The measurement model serves as the first step in evaluating the PLS-SEM results. It ensures the constructs meet the required validity and reliability criteria before proceeding to the structural model. The outer PLS model evaluates validity and reliability, focusing on internal consistency and construct dependability. To validate the model, measures such as Cronbach's alpha, composite reliability (CR),

average variance extracted (AVE), convergent validity, and discriminant validity are applied.

4.4.2 Reliability Analysis

Reliability analysis checks the internal consistency of the constructs using two key measures:

4.4.2.1 Cronbach's Alpha

Cronbach's alpha assesses internal consistency by evaluating variable correlations, assuming equal reliability among items. A value above 0.70 is considered acceptable (Colom, Jung, & Haier, 2006).

TABLE 4.3: Cronbach's Alpha

Evaluation	0.794
Monitoring	0.844
Organizational Agility	0.828
Project Sustainability	0.850
Stakeholder Engagement	0.824

4.4.2.2 Composite Reliability (CR)

Composite reliability is preferred in PLS-SEM because it accounts for the individual reliability of each item, unlike Cronbach's alpha, which assumes equal outer loadings and may be influenced by the number of items. CR values range from 0 to 1, with a recommended threshold of 0.70, (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014), making it a more robust measure of reliability.

TABLE 4.4: Composite Reliability

Evaluation	0.796
Monitoring	0.846
Organizational Agility	0.830
Project Sustainability	0.851
Stakeholder Engagement	0.827

4.4.3 Convergent Validity

Construct validity is composed of two components: discriminant validity and convergent validity (Hair et al., 2014). Convergent validity ensures that the items measuring a construct are highly correlated.

4.4.3.1 Average Variance Extracted

convergent validity assessed using Average Variance Extracted (AVE), which should exceed 0.50 (Kamis et al., 2020). In this study, all constructs met this threshold, as shown in Table.

TABLE 4.5: Average Variance Extracted

Evaluation	0.550
Monitoring	0.563
Organizational Agility	0.595
Project Sustainability	0.589
Stakeholder Engagement	0.532

4.4.3.2 Discriminant Validity

Discriminant validity refers to the extent to which a construct is truly distinct from other constructs within a model. The Fornell-Larcker criterion, a widely used approach for assessing discriminant validity, requires that the square root of each construct's AVE should be greater than its correlations with other constructs.

TABLE 4.6: Discriminant Validity

	M	E	OA	SE	PS
M	0.880				
E	0.715	0.860			
OA	0.642	0.689	0.872		
SE	0.593	0.671	0.702	0.845	
PS	0.611	0.648	0.677	0.701	0.890

In Table 4.6, all constructs satisfy this requirement. For example, the square root of AVE for M is 0.880, which is higher than its correlations with E (0.715), OA (0.642), SE (0.593), and PS (0.611). Similarly, the square root of AVE for E is 0.860, exceeding its correlations with all other constructs.

This pattern is consistent across all variables, indicating that each construct is empirically distinct from the others and confirming the presence of discriminant validity in the model.

4.5 Structural Model

The structural model was developed after assessing the measurement model and study variables, using PLS-SEM and bootstrapping techniques to evaluate the research hypotheses. This model examines the influence of Monitoring and Evaluation practices on Project Sustainability, examining the mediating role of Organizational Agility and the moderating effect of Stakeholder Engagement.

Hypothetical paths were tested using a PLS-SEM algorithm and the bootstrapping between latent variables, measuring outcomes through both direct and indirect paths, as illustrated in Figure 4.1.

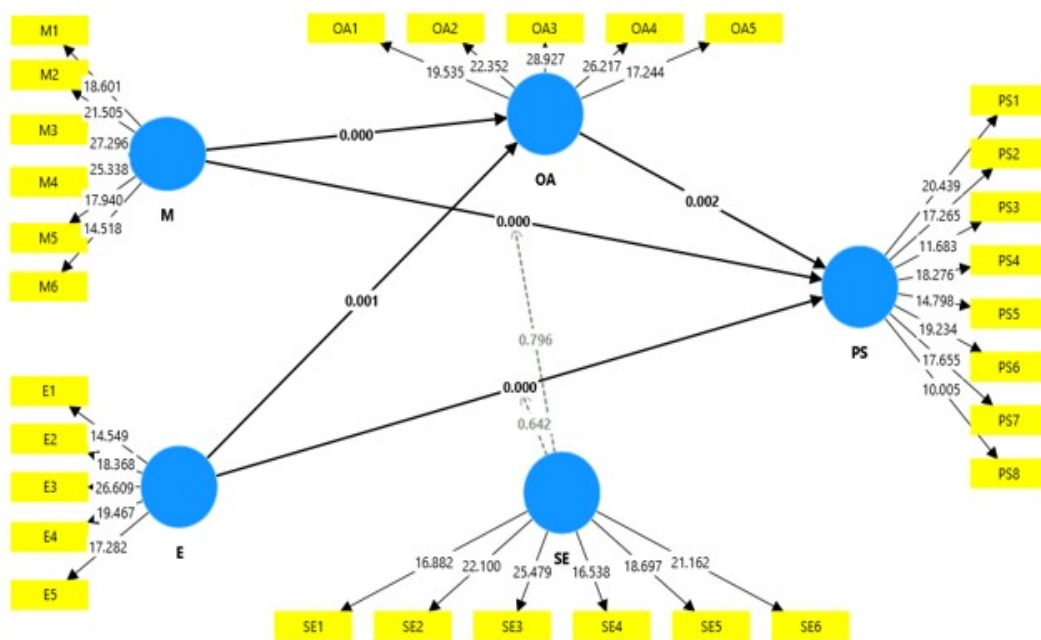


FIGURE 4.1: Structural Model

4.5.1 Hypotheses Testing of Direct Paths

Direct paths are measured between Monitoring and Evaluation practices and Project Sustainability, Monitoring and Evaluation practices and Organizational Agility, Organizational Agility and Project Sustainability. Further direct paths are measured between Organizational Agility and Project Sustainability. The results of the direct path analysis are summarized in Table.

TABLE 4.7: Direct Paths

	B	STDEV	T statistics	P values	Result
E ->OA	0.042	0.012	3.425	0.001	Supported
E ->PS	0.281	0.061	4.648	0.000	Supported
M ->OA	1.015	0.009	113.967	0.000	Supported
M ->PS	0.920	0.197	4.656	0.000	Supported
OA ->PS	0.587	0.193	3.042	0.002	Supported
SE ->PS	0.303	0.072	4.203	0.000	Supported

4.5.1.1 Test of Hypothesis 1

H1: Monitoring has a positive effect on project sustainability.

The study's analysis of the relationship between monitoring (M) and project sustainability (PS) revealed a positive correlation between the two variables. It indicates that a one-unit change in monitoring leads to a 0.920-unit change in project sustainability. The results are as follows: $M \rightarrow PS$ ($\beta = 0.920, SE = 0.197, t = 4.656, p < 0.001$).

4.5.1.2 Test of Hypothesis 2

H2: Evaluation has a positive effect on project sustainability.

The study's analysis of the relationship between evaluation (E) and project sustainability (PS) revealed a positive and significant correlation between the two variables. It shows that a one-unit change in evaluation results in a 0.281-unit change in project sustainability. The results are as follows: $E \rightarrow PS$ ($\beta = 0.281, SE = 0.061, t = 4.648, p < 0.001$).

Evaluation practices have a positive and significant impact on Project Sustainability ($\beta = 0.281, p = 0.000$).

The strong T-statistic (4.648) underscores the importance of effective monitoring and evaluation in driving sustainable project outcomes.

4.5.1.3 Test of Hypothesis 3

H3: Monitoring has a positive influence on organizational agility.

The relationship between Monitoring and Organizational Agility is very strong and highly significant ($\beta = 1.015, p = 0.000$). The extremely high T-statistic (113.967) reflects evidence of a direct positive impact.

4.5.1.4 Test of Hypothesis 4

H4: Evaluation has a positive influence on organizational agility

The relationship between Evaluation and Organizational Agility is positive and significant ($\beta = 0.042, p = 0.001$).

The T-statistic (3.425) and p-value indicate that changes in Evaluation have a statistically significant influence on Organizational Agility.

4.5.1.5 Test of Hypothesis 5

H5: Organizational agility has a positive effect on project sustainability.

There is a strong and significant positive relationship between the mediating variable and Project Sustainability ($\beta = 0.920, p = 0.000$). The T-statistic (4.656) supports the significance of this influence.

The study's analysis of the relationship between organizational agility (OA) and project sustainability (PS) revealed a positive and significant correlation between the two variables.

It indicates that a one-unit change in organizational agility results in a 0.587-unit change in project sustainability. The results are as follows: OA \rightarrow PS ($\beta = -0.587, R^2 = -0.570, SE = 0.193, t = 3.042, p = 0.002$).

4.5.2 Mediation Analysis (Indirect Model)

The concept of mediation refers to the relationship between independent and interdependent concepts (Hair et al., 2014). In this research, indirect effects were examined to evaluate mediation hypotheses.

TABLE 4.8: Mediation Analysis

	B	(STDEV)	2.50%	97.50%	Result
E ->OA ->PS	0.024	0.011	0.01	0.072	Supported
M ->OA ->PS	0.595	0.195	0.016	0.181	Supported

4.5.2.1 Test of Hypothesis 6

H6: Organizational agility mediates the relationship between monitoring and project sustainability.

Hypothesis 6 states that Organizational Agility mediates the relationship between Monitoring and Project Sustainability.

The probability value for the mediating path ($M \rightarrow OA \rightarrow PS$) is ($p = 0.002$), indicating a significant mediation effect.

4.5.2.2 Test of Hypothesis 7

H7: Organizational agility mediates the relationship between evaluation and project sustainability.

Similarly, Hypothesis 7 suggests that Organizational Agility mediates the relationship between evaluation and Project Sustainability. The probability value for this mediating path ($E \rightarrow OA \rightarrow PS$) is ($p = 0.023$), confirming the significant mediation effect.

These findings further support the notion that Organizational Agility acts as a critical mediating factor, strengthening the influence of Monitoring and Evaluation practices and the Mediating variable on Project Sustainability.

4.5.3 Moderation Analysis

The study examines the influence of Monitoring and Evaluation practices on Project Sustainability, considering the mediating role of Organizational Agility and the moderating effect of Stakeholder Engagement.

TABLE 4.9: Moderation Analysis

	B	STDEV	2.50%	97.50%	Result
SE x E ->PS	-0.032	0.068	-0.081	0.029	Not Supported
SE x M ->PS	0.018	0.069	-0.105	0.041	Not Supported

The moderation analysis reveals the following:

4.5.3.1 Test of Hypothesis 8

H8: Stakeholder engagement moderates the relationship between monitoring and project sustainability.

Stakeholder Engagement x Monitoring \rightarrow Project Sustainability (SE x M \rightarrow PS):

Similarly, the moderating effect of Stakeholder Engagement on the relationship between the Mediating variable (M) and Project Sustainability is also not significant

4.5.3.2 Test of Hypothesis 9

H9: Stakeholder engagement moderates the relationship between evaluation and project sustainability.

Stakeholder Engagement x Evaluation \rightarrow Project Sustainability (SE x E \rightarrow PS):

The moderating effect of Stakeholder Engagement on the relationship between evaluation and Project Sustainability is not significant. This indicates that varying levels of Stakeholder Engagement do not significantly alter this relationship.

These findings suggest that Stakeholder Engagement does not significantly strengthen or weaken the relationships between Monitoring and Evaluation practices, the Mediating variable, and Project Sustainability in the current model. This contrasts

with prior research, where strong stakeholder management has been shown to enhance related pathways.

4.6 Hypotheses Summary

Table 4.10 presents a summary of the hypotheses.

TABLE 4.10: Hypotheses Summary

Hyp.	Statements	Results
H1	Monitoring has a positive effect on project sustainability.	Supported
H2	Evaluation has a positive effect on project sustainability	Supported
H3	Monitoring has a positive influence on organizational agility.	Supported
H4	Evaluation has a positive influence on organizational agility	Supported
H5	Organizational agility has a positive effect on project sustainability.	Supported
H6	Organizational agility mediates the relationship between monitoring and project sustainability.	Supported
H7	Organizational agility mediates the relationship between evaluation and project sustainability.	Supported
H8	Stakeholder engagement moderates the relationship between monitoring and project sustainability.	Not Supported
H9	Stakeholder engagement moderates the relationship between evaluation and project sustainability.	Not Supported

Chapter 5

Discussion and Conclusion

This chapter explains the anticipated relationships among monitoring and evaluation (M&E) practices, project sustainability, organizational agility, and stakeholder engagement. It justifies these connections and explores their implications for sustainable project outcomes. The findings highlight the role of M&E in fostering project innovation and adaptability, with organizational agility serving as a key mediator.

The chapter also examines how stakeholder engagement influences the effectiveness of M&E practices, though its impact may vary. It contextualizes the results within existing theories, contributing to a deeper understanding of sustainable project management. Practical recommendations emphasize adopting adaptive strategies and advanced M&E systems to enhance sustainability in project environments.

5.1 Discussion

This study investigated the influence of Monitoring and Evaluation (M&E) practices on project sustainability, with a focus on the mediating role of organizational agility and the moderating effect of stakeholder engagement. The findings confirm that M&E practices are critical for promoting sustainable outcomes in construction projects. Specifically: Both monitoring and evaluation practices positively influence project sustainability, underscoring their role in enhancing project outcomes by ensuring timely interventions and informed decision-making.

Organizational agility significantly mediates the relationship between M&E practices and project sustainability, indicating that agile organizations are better equipped to adapt to environmental and operational challenges, thereby improving sustainability outcomes.

While stakeholder engagement is positively associated with project sustainability, its moderating effect on the relationship between M&E practices and sustainability was not significant, suggesting that other factors may influence this dynamic.

These findings contribute to the growing body of knowledge in project management by highlighting the interconnected roles of M&E, organizational agility, and stakeholder engagement in fostering sustainable project outcomes. The results of this study align with existing literature, reinforcing the importance of M&E systems in achieving project sustainability.

This study sought to explore the influence of Monitoring and Evaluation (M&E) practices on project sustainability, emphasizing the mediating role of organizational agility and the moderating effect of stakeholder engagement within the construction industry. Drawing on data collected from 390 participants and analyzed using advanced statistical techniques, the findings affirm that robust M&E practices significantly contribute to project sustainability.

Monitoring and evaluation practices are central to achieving project sustainability. By systematically tracking project progress and aligning activities with sustainability goals, M&E enables proactive decision-making and ensures the efficient allocation of resources.

This aligns with the findings of [Kissi et al. \(2019\)](#), who highlighted the critical role of M&E in optimizing project outcomes, and underscores its relevance across the project life cycle. The study demonstrated that organizational agility mediates the relationship between M&E and project sustainability. Agility allows organizations to adapt to environmental changes and operational challenges, ensuring that projects remain aligned with evolving sustainability objectives.

This finding is consistent with Dynamic Capability Theory ([Teece, 2007](#)), which posits that organizations with dynamic capabilities, such as agility, are better positioned to sense, seize, and reconfigure resources to achieve long-term competitive

advantages. Agility enhances the ability of M&E processes to address unforeseen challenges and incorporate innovative solutions, thereby fostering project resilience and sustainability.

While stakeholder engagement positively affects project sustainability, its moderating effect on the M&E-sustainability relationship was not significant. This suggests that while engaging stakeholders builds trust, transparency, and collaboration, its influence on the effectiveness of M&E practices may vary based on contextual factors such as project complexity, stakeholder diversity, and cultural dynamics. This nuanced finding diverges from the generalized assertions of [Bourne \(2016\)](#); [Eskerod and Huemann \(2013\)](#), emphasizing the need for tailored engagement strategies.

5.1.1 Monitoring has a Positive Effect on Project Sustainability

Monitoring is a systematic process of collecting, analyzing, and using information to track a project's progress and assess its performance against predefined objectives (Naidoo, 2011). Effective monitoring ensures transparency, accountability, and informed decision-making, which are crucial for achieving project sustainability.

This hypothesis is grounded in the premise that continuous assessment and feedback mechanisms enable project teams to identify potential risks and implement timely corrective measures, thereby enhancing the project's long-term viability.

Monitoring facilitates real-time adjustments to project strategies in response to changing circumstances. By identifying deviations from planned outcomes early, project managers can implement corrective actions, reducing resource wastage and ensuring the project aligns with its sustainability goals (Nyandika & Ngugi, 2014).

Monitoring ensures optimal allocation and utilization of resources, a critical factor in achieving sustainability. Projects that implement robust monitoring mechanisms are better equipped to prevent resource depletion and environmental degradation, aligning with sustainability principles ([Turner, 2009](#)). Monitoring and evaluation significantly enhance project sustainability, as evidenced by the study's

findings. Effective community participation in these processes leads to improved project performance, with clear objectives and robust systems accounting for substantial variance in sustainability outcomes. (Van Gestel, Ferlie, & Grotenbreg, 2024)

The study found a positive significant relationship between Monitoring and Evaluation (M&E) best practices and project sustainability, with 80.3% of respondents agreeing that M&E results were effectively communicated, indicating M&E's crucial role in enhancing project sustainability (Nkurunziza et al, 2022).

Monitoring and Evaluation practices positively influence project sustainability by enhancing beneficiary participation, improving motivation, fostering project ownership, and ensuring shared decision-making, which collectively contribute to long-term commitment and engagement in NGO projects, as highlighted in the study. (Hellen Nalukwago & Kennedy Kibukho, 2022)

H1: Monitoring has a positive effect on project sustainability

5.1.2 Evaluation Has a Positive Effect on Project Sustainability

Evaluation is a systematic process of assessing a project's performance, outcomes, and impacts to determine success against predefined objectives. Evaluation practices are a critical component of Monitoring and Evaluation (M&E) that significantly affect project outcomes. They provide data-driven insights essential for decision-making and continuous improvement, ultimately contributing to sustainability. (Issifu, et al , 2023). This hypothesis is based on both theoretical and empirical evidence highlighting the relationship between effective evaluation and sustainable project outcomes. Evaluation enables project teams to assess the efficiency, effectiveness, and relevance of project activities, making it a cornerstone for informed decision-making. By identifying what works and what does not, evaluations guide resource reallocation, strategy adjustments, and goal realignment, all of which are crucial for long-term project success. As Ismail, Hassan. (2020) noted, projects with rigorous evaluation frameworks are more likely to achieve sustainability, as they foster transparency and accountability among stakeholders.

Monitoring and evaluation (M&E) are critical components that enhance project sustainability by promoting data-driven decision-making, facilitating learning, and improving project performance. Community participation in M&E ensures beneficiaries' involvement, leading to empowerment and capacity building, which further supports sustainability. (Van Gestel et al., 2024)

The paper emphasizes that Monitoring and Evaluation (M&E) is crucial for project sustainability, offering data-driven insights that inform decision-making, enhance project design, and facilitate continuous improvement, ultimately influencing the effectiveness of rural development projects.

Finally, monitoring and evaluation were perceived as critical tools for improving project performance. They promote data-driven decision-making, which is essential for enhancing project sustainability. The study emphasizes that effective monitoring and evaluation practices can lead to better outcomes and ensure that projects continue to meet the needs of the community over time ((Van Gestel et al., 2024)

The research found that both monitoring and evaluation practices significantly and positively affect project outcomes. This suggests that effective M&E can lead to better performance in tech start-ups

H2: Evaluation has a positive effect on project sustainability.

5.1.3 Monitoring has a Positive Effect on Organizational Agility

Monitoring refers to the ongoing collection and analysis of data during project implementation to track progress and ensure alignment with goals. Organizational agility, on the other hand, is the ability of an organization to rapidly adapt to changes in its environment by leveraging insights, fostering flexibility, and implementing effective strategies (Doz & Kosonen, 2010).

This hypothesis is grounded in the premise that monitoring serves as a critical enabler of organizational agility by providing timely feedback, fostering proactive decision-making, and enhancing adaptability. Continuous monitoring generates real-time data that enables organizations to quickly identify deviations from

planned outcomes. This responsiveness allows organizations to adjust their strategies, processes, and resource allocation to maintain alignment with objectives in a dynamic environment. For instance, Serrador and Turner (2015) found that projects with robust monitoring systems exhibit higher levels of adaptability and improved performance, which are hallmarks of organizational agility.

Monitoring helps organizations identify emerging risks and uncertainties, which are critical in volatile environments. By tracking performance and external factors, monitoring provides the foresight needed to mitigate risks effectively. This proactive approach to risk management is a key characteristic of agile organizations. According to Pal et al. (2014), organizations that integrate monitoring into their processes are better equipped to anticipate disruptions and adjust operational strategies.

Monitoring fosters a culture of continuous improvement by identifying areas where processes or strategies can be optimized. This learning-oriented approach enables organizations to innovate and adapt to new opportunities, enhancing their agility. Chatterjee, Sheshadri, et al. (2021) highlight that iterative evaluation through monitoring drives creativity and process refinement, critical for maintaining agility in dynamic markets.

The paper indicates that monitoring positively influences organizational performance by identifying implementation challenges, which can enhance accountability and transparency. While it does not explicitly address organizational agility, improved performance through monitoring may contribute to greater agility in private higher academic institutions.

The paper discusses that optimized cross-organizational business process monitoring enhances visibility and responsiveness, which positively impacts organizational agility. By facilitating timely decision-making and adaptability, effective monitoring supports organizations in navigating dynamic environments and improving overall performance. Organizations can implement the agility required to survive in the rapidly evolving business landscape by focusing on their core business and engaging in collaborations with other partners. This entails the need for organizations to monitor the behavior of the partners with which they collaborate. (Comuzzi Marco et al , 2013).

The Dynamic Capability Theory (Teece, 2007) underpins this hypothesis, emphasizing that organizations must continually adapt, integrate, and reconfigure internal and external resources to respond to environmental changes. Monitoring plays a pivotal role in enabling these dynamic capabilities by providing the actionable insights needed to sense opportunities and threats, seize them, and reconfigure resources accordingly.

H3: Monitoring has a positive influence on organizational agility.

5.1.4 Evaluation has a Positive Effect on Organizational Agility

This hypothesis is grounded in the premise that evaluation provides actionable insights, enhances learning, and promotes flexibility, all of which are integral to achieving and maintaining agility.

Evaluation provides real-time insights that enable organizations to adapt quickly to changing circumstances. By analyzing past and current performance, evaluations help identify inefficiencies, risks, and opportunities for improvement. This proactive decision-making process is a hallmark of agile organizations, as noted by Kohtamäki et al. (2019), who found that evaluation fosters strategic flexibility, allowing organizations to pivot their strategies as needed.

Evaluation enhances an organization's ability to anticipate risks and implement effective mitigation strategies. By systematically assessing outcomes and identifying potential threats, organizations can develop contingency plans that ensure continuity and adaptability. Pal et al. (2014) emphasize that organizations leveraging evaluation for risk management are better equipped to remain agile in volatile environments. Evaluations help align organizational strategies with evolving external conditions, ensuring that goals remain relevant and achievable. This alignment strengthens an organization's capacity to adapt to market changes and stakeholders' expectations.

As Appelbaum et al. (2017) note, evaluation processes provide the strategic clarity needed for organizations to remain agile and competitive. Evaluation has a significant positive effect on organizational agility, as evidenced by various studies that

highlight the interconnections between evaluation processes, leadership, culture, and agility. These evaluations not only enhance decision-making but also foster an environment conducive to adaptability and innovation. The following sections elaborate on the key aspects of this relationship.

It emphasizes that agility can enhance organisational performance across multiple dimensions, including financial performance, innovation, competitiveness, and customer service. Frequent evaluations help organizations identify agility gaps and respond to market changes promptly, enhancing overall performance (Nguyen et al., 2024).

H4: Evaluation has a positive influence on organizational agility.

5.1.5 Organizational Agility has a Positive Effect on Project Sustainability

Organizational agility, defined as the ability to rapidly sense, respond to, and adapt to environmental changes, plays a critical role in achieving project sustainability. Project sustainability refers to a project's capacity to deliver long-term economic, social, and environmental benefits. This hypothesis is grounded in the premise that organizational agility enhances resilience, innovation, and stakeholder alignment, thereby improving the likelihood of sustainable project outcomes.

Organizational agility enables firms to respond swiftly to external challenges, such as resource shortages, regulatory changes, or shifts in stakeholder expectations. Agility ensures that projects remain aligned with evolving sustainability goals, such as minimizing environmental impacts or improving social equity. A study by Natarajan, Ashok, and Muhammad Kamran. (2019) highlights that agile organizations are better equipped to integrate sustainable practices into project workflows, ensuring long-term viability.

The key factors contributing to organizational agility include understanding the environment, managing internal change impacts, and balancing immediate needs with future planning. These dimensions enhance adaptability, enabling organizations to sustain agility and positively influence project sustainability. (Barroca, Leonor, et al. 2023)

The key factors contributing to organizational agility include embracing an agile mindset, adaptability to change, and a focus on continuous evolution. These elements enhance project sustainability by enabling organizations to remain relevant and competitive in a rapidly changing technological marketplace. The paper emphasizes that an organization's ability to adapt and evolve is crucial for its sustainability and viability in today's rapidly changing technological landscape. This adaptability is essential for organizations to remain competitive and relevant in the market (Shah, Muhammad, 2023)

Key factors contributing to organizational agility include a responsive mindset, the ability to redirect resources swiftly, and a culture that recognizes and rewards innovation. These elements enhance short-term competitiveness and foster sustainable innovations, positively impacting project sustainability. (Shaikh, Zuber Peermohammed.,2024)

H5: Organizational agility has a positive effect on project sustainability.

5.1.6 Organizational Agility as Mediator

Organizational agility refers to an organization's ability to adapt rapidly and effectively to changing conditions, which is critical in achieving sustainable project outcomes (Doz & Kosonen, 2010).

In the context of monitoring and evaluation, the integration of agile practices can enhance decision-making and responsiveness, directly influencing project sustainability.

Monitoring and evaluation provide real-time data and insights, enabling organizations to identify risks, inefficiencies, and areas for improvement (Naidoo, 2011). Effective M&E practices create a feedback loop that supports adaptive management, a key principle of organizational agility (Leybourne, 2007).

This adaptability ensures that project teams can respond to unforeseen challenges, aligning project goals with sustainability criteria. Organizational agility ensures that the insights derived from M&E are utilized to implement dynamic solutions, thereby improving resource allocation, stakeholder engagement, and long-term project outcomes (Teece, 2007). For example, agile organizations are better

equipped to incorporate stakeholder feedback and environmental considerations into their projects, contributing to sustainability (Nyandika & Ngugi, 2014).

The relationship between M&E and project sustainability is strengthened when organizational agility acts as a mediator. M&E provides the necessary information, while agility enables the organization to act on this information promptly and effectively (Dubey, Gunasekaran, & Childe, 2019). Without agility, the insights from M&E might not translate into actionable strategies, thereby limiting their impact on sustainability.

Agility serves as a mediating factor by bridging the gap between technological innovation, knowledge management, and sustainable competitive advantage. This mediation is crucial for leveraging M&E insights to enhance project sustainability (Satar et al., 2024). agility mediates the impact of digital capabilities on organizational performance, highlighting its role in translating M&E findings into actionable strategies that enhance project sustainability (Atobishi, Moh'd Abu Bakir, & Nosratabadi, 2024).

Organizations should invest in building agile capabilities to effectively utilize M&E insights for sustaining projects. This involves fostering a culture of adaptability and continuous learning, which are essential for integrating M&E outcomes into strategic planning (Atobishi et al., 2024).

It emphasizes the significance of organizational agility as a vital capability that enables companies to respond effectively to changes in the market. Agility is presented as a necessary trait for organizations aiming to thrive amidst technological disruptions.

A study by Satar, Abdul, et al (2024) shows that Organizational agility plays a crucial mediating role in the relationship between technological innovation and knowledge management concerning sustainable competitive advantage. This means that the benefits of technological innovation and knowledge management are amplified when organizations are agile, allowing them to adapt and thrive in a competitive environment

H6: Organizational agility mediates the relationship between monitoring and project sustainability.

H7: Organizational agility mediates the relationship between evaluation and project sustainability.

5.1.7 Moderating Role of Stakeholder Engagement in the Relationship Between Monitoring and Evaluation and Project Sustainability

Recent studies have examined how stakeholder engagement, monitoring and evaluation (M&E), and project sustainability are connected. These studies suggest that stakeholder engagement does not significantly influence or change the strength of the relationship between M&E and project sustainability. While stakeholder engagement is generally considered beneficial for project outcomes, certain studies have identified scenarios where it may negatively impact the relationship between monitoring and evaluation (M&E) and project sustainability. For instance, a study by (Kadurira & Nyagah, 2021), concluded that M&E had a statistically significant but negative relationship with project sustainability. This suggests that, in some cases, increased stakeholder involvement in M&E processes may introduce complexities or conflicts that hinder sustainable outcomes. Additionally, (Bahadorestani, Naderpajouh, & Sadiq, 2020), argue that a lack of effective stakeholder engagement can negatively impact expected project performance. This implies that inadequate or poorly managed stakeholder participation in M&E activities might decrease project sustainability.

These findings highlight that while stakeholder engagement is crucial, it must be effectively managed to avoid potential negative impacts on the relationship between M&E and project sustainability.

While Stakeholder Engagement (SE) and M&E independently contribute to project sustainability, studies suggest a lack of empirical evidence for SE as a moderating factor. For instance, a study by Blak Bernat, Qualharini, and Castro (2023) found that both SE and M&E independently enhance sustainability but failed to identify SE as a significant moderator between M&E and sustainability outcomes. This suggests that SE operates parallel to, rather than interacting with, M&E to influence sustainability.

Research by Bahadorestani et al. (2020) highlights that stakeholder engagement can lead to conflicting interests, which complicates decision-making processes. These conflicts may dilute the effectiveness of M&E practices, thereby weakening their link to sustainability outcomes. As such, SE might not positively moderate this relationship but could instead introduce variability that obscures the direct effects of M&E.

The relationship between M&E, SE, and sustainability might not be linear, as implied by a moderation hypothesis. As observed by Mwangi (2015), stakeholder involvement in M&E can sometimes result in delays and inefficiencies due to differing priorities among stakeholders, reducing the direct benefits of M&E on sustainability outcomes.

H8: Stakeholder engagement moderates the relationship between monitoring and project sustainability.

H9: Stakeholder engagement moderates the relationship between evaluation and project sustainability.

5.2 Practical and Theoretical Implication

The research presents several practical implications that can guide organizations in achieving project sustainability. Robust monitoring and evaluation (M&E) practices are critical, and organizations should adopt advanced frameworks that integrate Key Performance Indicators (KPIs) focused on environmental, social, and economic dimensions. Such frameworks ensure that project objectives align with long-term sustainability goals, enabling organizations to assess performance comprehensively and make informed decisions. The findings emphasize the importance of cultivating organizational agility to respond effectively to dynamic challenges. This can be achieved through targeted training programs that enhance employee adaptability, investments in technology for real-time monitoring and decision-making, and processes that facilitate rapid resource reallocation in response to evolving project demands. Stakeholder engagement, while not identified as a significant moderating factor between M&E and project sustainability, remains essential for overall project success. Active involvement of stakeholders

throughout the project lifecycle, coupled with transparent communication and regular feedback assessments, can help align project objectives with stakeholder needs. Policymakers can leverage these insights to create standardized guidelines that promote integrating M&E, organizational agility, and stakeholder engagement into project management practices.

This standardization is particularly relevant in the construction sector, where sustainability challenges are pronounced. Furthermore, the findings highlight the importance of tailoring these approaches to local contexts, especially in developing countries like Pakistan, where cultural, economic, and environmental factors require unique solutions.

The study also has significant theoretical implications, advancing the understanding of dynamic capability theory by demonstrating how organizational agility mediates the relationship between M&E practices and project sustainability. This highlights the strategic importance of agility in dynamic environments, reinforcing its role as a critical capability.

The findings challenge existing theoretical models that emphasize the moderating role of stakeholder engagement, suggesting it may function more effectively as an independent or mediating variable. By integrating M&E, organizational agility, and stakeholder engagement into a single framework, the research provides a comprehensive model for understanding project sustainability, offering a valuable foundation for further academic exploration. Sector-specific insights from the study contribute to the limited literature on M&E and sustainability within the construction industry.

The findings underline the need for studies tailored to different sectors, as unique factors influence sustainability in various contexts. By addressing gaps in long-term sustainability research, the study establishes a link between M&E practices and organizational capabilities, paving the way for future investigations into additional factors, such as cultural influences or technological advancements, that shape sustainable project outcomes.

These practical and theoretical contributions enhance the understanding of sustainable project management and provide actionable strategies for practitioners and researchers.

5.2.1 Practical Implication

The research offers several practical implications that organizations can apply to enhance project sustainability, especially in the construction industry. Effective monitoring and evaluation (M&E) practices emerge as critical tools for achieving sustainable outcomes. Organizations should prioritize the adoption of comprehensive M&E frameworks that integrate Key Performance Indicators (KPIs) addressing environmental, social, and economic dimensions. By systematically tracking these indicators, organizations can gain valuable insights into their projects' strengths and weaknesses, enabling real-time adjustments to align with sustainability goals. This approach not only ensures project efficiency and effectiveness but also fosters long-term value creation for stakeholders.

Organizational agility is another essential factor highlighted in the study, serving as a mediating mechanism between M&E practices and sustainability. Companies can enhance their agility by investing in workforce training that emphasizes adaptability and innovation, equipping employees with the skills to respond to dynamic challenges. Similarly, technological investments, such as advanced project management software and data analytics tools, can empower organizations to monitor progress and make evidence-based decisions more efficiently. Building flexible resource allocation processes can further enable organizations to adapt to shifting priorities, ensuring optimal use of time, budget, and materials while maintaining sustainability commitments.

Although stakeholder engagement did not emerge as a significant moderating factor in this study, its role in overall project success remains undeniable. Organizations should implement structured stakeholder engagement strategies, ensuring that stakeholders are actively involved throughout the project lifecycle.

Creating open communication channels and fostering regular feedback loops can help address stakeholder concerns and align project objectives with broader expectations. Transparent and inclusive engagement practices not only build trust and legitimacy but also encourage a sense of ownership among stakeholders, which is vital for sustaining project outcomes. The findings also have implications for policymakers, who can use the research to develop guidelines and standards that

promote sustainable project management practices. Policymakers should consider incentivizing organizations to integrate M&E, organizational agility, and stakeholder engagement into their operational frameworks. For example, providing tax benefits or certifications for companies that demonstrate sustainable practices could encourage wider adoption. Additionally, this research highlights the importance of tailoring these strategies to local contexts, particularly in developing countries like Pakistan, where unique cultural, economic, and environmental challenges require bespoke solutions.

Furthermore, the study's emphasis on integrating sustainability into the construction sector underscores the need for industry-specific adaptations. Construction projects often face resource-intensive demands and environmental challenges, making sustainability a critical concern. Organizations can adopt green construction practices, such as using renewable materials and minimizing waste, in conjunction with robust M&E systems to track progress. Regular training for project teams on sustainability principles can also enhance their ability to incorporate these practices into day-to-day operations.

Finally, the research demonstrates the importance of a proactive approach to project management, where M&E practices are not treated as standalone activities but are embedded within a broader sustainability framework. This ensures a holistic understanding of project dynamics, enabling organizations to align activities with long-term sustainability goals.

Such an approach not only improves project outcomes but also contributes to broader environmental and societal well-being, making it a vital strategy for organizations striving to meet the demands of modern project management. By adopting these practical measures, organizations can significantly enhance the sustainability of their projects, ensuring long-term success and positive impact.

5.2.2 Theoretical Implication

The study provides significant theoretical contributions that enhance the understanding of sustainable project management, particularly through its exploration of the relationships between monitoring and evaluation (M&E), organizational

agility, stakeholder engagement, and project sustainability. One of the primary theoretical implications is the advancement of dynamic capability theory. The findings reinforce the importance of organizational agility as a critical mediator in the relationship between M&E practices and sustainability. This underscores agility's role as a strategic capability, enabling organizations to adapt to dynamic environments, reconfigure resources, and sustain competitive advantage. By situating agility within the framework of sustainable project management, the research enriches dynamic capability theory, offering a deeper understanding of its practical applications.

The study also challenges established theoretical models by revealing that stakeholder engagement does not significantly moderate the M&E-sustainability relationship. This finding calls for a reevaluation of frameworks that prioritize stakeholder engagement as a moderating factor, suggesting that its role might be more impactful when conceptualized as an independent or mediating variable. This shift in perspective broadens the theoretical discourse on the role of stakeholders, highlighting the need for more nuanced models that account for the complexity and variability of stakeholder dynamics in different project contexts.

Additionally, the research offers a comprehensive framework that integrates M&E, organizational agility, and stakeholder engagement, providing a holistic view of the factors influencing project sustainability. This integrated approach contributes to the theoretical literature by demonstrating how these elements interact to enhance sustainable outcomes, paving the way for future studies to refine and expand this framework. It also bridges the gap between traditional and modern project management paradigms by incorporating sustainability as a core objective, moving beyond the conventional focus on time, cost, and scope.

The sector-specific insights from the study further contribute to the theoretical discourse, particularly in the context of the construction industry. Existing literature often generalizes findings across industries, but this research highlights the unique challenges and opportunities within construction projects. By addressing the specific roles of M&E and organizational agility in this sector, the study enriches the theoretical understanding of how sustainability can be achieved in resource-intensive and environmentally sensitive industries.

Moreover, the study's findings emphasize the importance of long-term perspectives in sustainability research. While much of the existing literature focuses on short-term outcomes, this research highlights the critical role of sustained M&E practices and organizational adaptability in achieving lasting project benefits. This theoretical contribution encourages future scholars to adopt longitudinal approaches, exploring how M&E evolves and interacts with other organizational capabilities to drive sustainability over time.

The research also opens avenues for exploring cultural and contextual variables that influence the effectiveness of M&E, organizational agility, and stakeholder engagement. By focusing on the construction industry in Pakistan, the study underscores the importance of contextualizing theoretical models to reflect local economic, cultural, and organizational realities. This context-specific approach contributes to the broader theoretical literature by demonstrating how global theories can be adapted to address regional challenges, enriching their applicability and relevance.

Lastly, the study lays the groundwork for future investigations into the interplay between sustainability practices and emerging trends in project management, such as digital transformation and artificial intelligence. Incorporating these technological advancements into existing theoretical models can provide a more comprehensive understanding of how M&E and organizational capabilities can be leveraged in increasingly complex project environments. These theoretical contributions not only advance the academic understanding of sustainable project management but also provide a robust foundation for future empirical research.

5.3 Limitations and Future Research Directions

Despite the valuable insights provided by the study, there are several limitations that must be acknowledged. These limitations can serve as a foundation for future research and offer opportunities to refine and expand the understanding of the influence of monitoring and evaluation (M&E) on project sustainability. One of the primary limitations of this research is its cross-sectional design. Data collection was conducted at a single point in time, which restricts the ability to establish

causal relationships between the variables. While the study provides significant evidence of associations among M&E practices, organizational agility, stakeholder engagement, and project sustainability, longitudinal studies are required to capture the dynamic nature of these relationships over time. Future research could adopt a longitudinal approach to understand how M&E practices and their interactions with other variables evolve and contribute to sustainability across different phases of a project.

Another limitation lies in the reliance on self-reported data collected through structured questionnaires. While this approach ensures consistency and comparability, it may introduce response bias, as participants may overestimate or underestimate their experiences or perceptions. To address this, future studies could incorporate mixed-methods approaches, combining quantitative data with qualitative insights from interviews or case studies. This would provide a richer, more nuanced understanding of how M&E practices are implemented and their impact on sustainability.

The study's focus on the construction industry in Pakistan, while valuable for generating context-specific insights, limits the generalizability of the findings to other industries and regions. The unique cultural, economic, and organizational characteristics of the Pakistani construction sector may not fully represent the dynamics of M&E and sustainability in other contexts. Future research could explore these relationships in diverse industries and geographical regions to validate and extend the applicability of the findings.

A comparative analysis across sectors such as healthcare, education, or renewable energy could reveal industry-specific challenges and best practices. The role of stakeholder engagement as a moderating variable did not yield significant findings in this study. While this challenges existing theoretical models, it also suggests the need for further investigation into the complex nature of stakeholder dynamics.

Future research could explore alternative conceptualizations of stakeholder engagement, such as its role as a mediator or an independent variable, and examine how different stakeholder groups (e.g., internal vs. external, primary vs. secondary) influence sustainability outcomes. Additionally, studies could delve into the contextual factors that shape stakeholder interactions, such as organizational culture,

power dynamics, or socio-political environments. The study primarily used traditional M&E indicators and frameworks, which may not fully capture the potential of emerging technologies and methodologies in enhancing project sustainability. For instance, the integration of advanced data analytics, artificial intelligence, and Internet of Things (IoT) technologies into M&E systems could offer new opportunities for real-time monitoring and predictive analysis. Future research could investigate the impact of these technological advancements on M&E effectiveness and their contributions to sustainability.

Another area for future exploration is the intersection of M&E and organizational agility with sustainability-driven innovations. While this study highlights the mediating role of agility, it does not fully address how organizations can foster a culture of innovation to achieve sustainable outcomes. Research could focus on the mechanisms through which agility and innovation interact, identifying strategies to balance responsiveness with long-term sustainability goals.

Lastly, the study's emphasis on environmental, social, and economic dimensions of sustainability provides a solid foundation, but future research could expand this framework to include additional dimensions such as cultural, ethical, or governance-related factors. These broader considerations could enrich the understanding of sustainability and provide organizations with more comprehensive strategies for achieving long-term success. In conclusion, while this study provides valuable contributions to the literature on sustainable project management, its limitations highlight the need for further research. By addressing these gaps, future studies can build on the current findings to develop more robust, generalizable, and actionable insights for practitioners and policymakers. This will help advance the field and promote sustainable practices across diverse project management contexts.

5.4 Conclusion

This study explores how monitoring and evaluation (M&E) practices affect project sustainability in the construction industry in Pakistan. It emphasizes that sustainability is a long-term process that involves balancing environmental, social, and economic goals. The research shows that M&E practices are crucial for achieving

sustainable project outcomes by helping organizations track progress, assess performance, and ensure accountability through Key Performance Indicators (KPIs). These practices contribute to better decision-making and continuous improvement throughout the project lifecycle.

The study also highlights the role of organizational agility as a key factor in enhancing project sustainability. Agility allows companies to quickly adapt to changes, manage resources effectively, and handle risks, which is especially important in industries like construction. By fostering a culture of adaptability and using technologies for real-time monitoring, organizations can better align with sustainability goals.

Interestingly, the study finds that stakeholder engagement does not significantly affect the relationship between M&E practices and sustainability, suggesting that its role is more complex than previously thought. However, stakeholder engagement still plays an important role in building trust, transparency, and legitimacy in projects.

The study's focus on the construction industry in Pakistan reveals unique challenges, such as cultural, economic, and regulatory factors. It suggests that M&E practices can help address these challenges by aligning project management with sustainability principles. However, strategies must be adapted to fit local contexts. The research has some limitations, like relying on self-reported data, and suggests further studies to explore the impact of emerging technologies like artificial intelligence and data analytics on M&E systems.

In conclusion, the study emphasizes the importance of M&E practices in promoting sustainability. By integrating organizational agility and stakeholder engagement, organizations can create more resilient and sustainable projects. The findings provide a solid foundation for improving sustainable project management practices and offer practical advice for policymakers and industry professionals

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Appendix A

CAPITAL UNIVERSITY OF SCIENCE & TECHNOLOGY
ISLAMABAD

Questionnaire

Dear respondent,

Respectable respondent, I am MS (Project Management) research scholar at Capital University Science and Technology (CUST), Islamabad; I am collecting data for my thesis, **“The influence of Monitoring and Evaluation on Project Sustainability: examining the Mediating role of organizational agility and Moderating effect of Stakeholder Engagement”**

It will take you 10-15 minutes to answer the questions and to provide valuable information. I assure you that data were be strictly kept confidential and only be used for academic purposes.

Thank you

Regards,

M. Mazhar Hussain

MS Research Scholar

Demographics:

Demographics:

Gender	1-Male 2-Female
Age(years)	1(18-25) 2(26-33), 3(34-41), 4(42-49), 5 (50-above)
Qualification	1(Matric),2(Bachelor),3(Master),4 (MS/M.Phil.), 5 (PhD)
Experience(years)	1(5andLess),2(6-13), 3(14-21),4(22-29), 5(30-above)

	Please mention your level of agreement on the following statements about Monitoring and Evaluation in your Institute on five-point Likert scale (1=strongly disagree;2=disagree;3=neutral; 4=agree; 5=strongly agree).	strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
	Monitoring and Evaluation Monitoring and evaluation planning (MEP)							

M1	There is a comprehensive planning of the project cost.	1	2	3	4	5	6	7
M2	The timeliness of the project is incorporated into the project plan	1	2	3	4	5	6	7
M3	There is a risk assessment and mitigation planning	1	2	3	4	5	6	7
M4	Project framework is put in place for planners to measure performance from beginning to end of the project	1	2	3	4	5	6	7

M5	The M&E budget is defined within the total project budget.	1	2	3	4	5	6	7
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		Evaluation						
E1	There is a performance of a midterm project evaluation	1	2	3	4	5	6	7
E2	There is a performance of end of project evaluation to ascertain how project performed	1	2	3	4	5	6	7
E3	After project implementation, lessons are captured and documented for subsequent projects	1	2	3	4	5	6	7

E4	Lessons learned from evaluation are shared with project implementing staff as well as stakeholders	1	2	3	4	5	6	7
E5	External project evaluators are allowed in the M&E process	1	2	3	4	5	6	7

<p>Please mention your level of agreement on the following statements about Project Sustainability in your Institution on five-point Likert scale (1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree).</p>							
	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree

Project Sustainability								
PS 1	Within the project decision making, the environmental footprint was essential to take into consideration.	1	2	3	4	5	6	7
PS2	We spent a considerable percentage of the project time and budget on health and safety practices.	1	2	3	4	5	6	7
PS3	Sustainable resources were used for the completion of project activities.	1	2	3	4	5	6	7
PS5	Within the project decision making, the economic, social and environmental consequences were crucial for the project.	1	2	3	4	5	6	7
PS6	Within the project decision making, health and safety issues were checked	1	2	3	4	5	6	7
PS7	Within the project decision making, the carbon footprint was essential to take into consideration.	1	2	3	4	5	6	7
PS8	The sustainability of the project life cycle was important throughout the project	1	2	3	4	5	6	7
PS9	The procurement process was sustainable throughout the project	1	2	3	4	5	6	7

Please mention your level of agreement on the following statements about Stakeholder Engagement in your Institute on five-point Likert scale (1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree).		strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat agree	Agree	Strongly Agree
Stakeholder Engagement								
SE1	Projects stakeholders were formally identified	1	2	3	4	5	6	7
SE 2	Stakeholders were classified by their level of influence, power, and interest in the project.	1	2	3	4	5	6	7
SE 3	Stakeholders of the project, especially those with high power and influence, had their needs deployed inactions and activities throughout the life of the project.	1	2	3	4	5	6	7
SE 4	Stakeholders were mapped by the level of urgency and legitimacy in the project.	1	2	3	4	5	6	7

SE5	The Stakeholders of the project had their objectives open in actions and activities.	1	2	3	4	5	6	7
SE 6	During the execution of the project, inclusions and/or changes in activities were planned to adapt to the identified needs of the Stakeholders.	1	2	3	4	5	6	7
SE 7	There has been frequent communication with the main Stakeholders regarding the project.	1	2	3	4	5	6	7

Please mention your level of agreement on the following statements about Organizational agility in your Institute on five-point Likert scale (1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree).		Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat agree	Agree	Strongly Agree
	Organizational agility							
OA1	We have the ability to rapidly respond to customers 'needs	1	2	3	4	5	6	7
OA2	We have the ability to rapidly adapt production to demand fluctuations.	1	2	3	4	5	6	7

OA3	We have the ability to rapidly cope with problems from suppliers.	1	2	3	4	5	6	7
OA4	We rapidly implement decisions to face market changes	1	2	3	4	5	6	7
OA5	We continuously search for forms to reinvent or redesign our organization	1	2	3	4	5	6	7