Journal of Research Administration
Society of Research Administrators International

HYBRID PROJECT MANAGEMENT AND ENVIRONMENTAL SUSTAINABILITY IN ENUGU STATE, NIGERIA

Chukwu Chinaechetam
Department of Architecture, Godfrey Okoye University, Enugu, Enugu State, Nigeria

Okoye, Boniface. S. A.
Department of Architecture, Godfrey Okoye University, Enugu, Enugu State, Nigeria

Agu Augustine Obinna
Department of Architecture, University of Nigeria, Enugu Campus, Nigeria

Abstract
The study examined the effect of Hybrid Project Management on Environmental Sustainability in Enugu State, Nigeria. The specific objectives were to examine the effect of Blended Project Management on Environmental Sustainability and evaluate the effect of Adaptive Project Management on Environmental Sustainability in Enugu State, Nigeria. A descriptive cross-sectional research design was adopted for the study. Data were collected using a structured questionnaire design with a five-point Likert scale and analyzed using SPSS version 26.0. Simple linear regression analysis was employed to test the study's hypotheses. The result revealed that Blended Project Management has a significant positive effect on Environmental Sustainability with a p-value of ($0.019 < 0.05$), and Adaptive Project Management has a significant positive effect on Environmental Sustainability with a p-value of ($0.024 < 0.05$), in Enugu State, Nigeria. The study concluded that Hybrid Project Management has a significant positive effect on Environmental Sustainability in Enugu State, Nigeria. The study recommended, among others, that Government ministries, development agencies, and private project organizations in Enugu State should formally integrate Hybrid Project Management (HPM) frameworks into their operational strategies.

Keywords: Environmental, Hybrid, Management, Project, Sustainability.

1. INTRODUCTION

As the global focus on sustainable development intensifies, project management methodologies have undergone considerable transformation to address complex socio-environmental challenges. In Nigeria, particularly in Enugu State, one of the country's leading administrative and industrial centers, the demand for developmental projects that balance economic growth and environmental protection has become increasingly pronounced. To address these dual objectives, many organizations and public institutions are turning toward Hybrid Project Management (HPM), an approach that combines the structured discipline of predictive (traditional) frameworks with the flexibility and adaptability of agile methodologies (Project Management Institute [PMI], 2021; Akinsola & Olatunji, 2022).

Hybrid Project Management offers a multidimensional framework that facilitates effective resource use, stakeholder collaboration, and iterative project development. These traits are essential in environmentally oriented projects, where unpredictability, dynamic ecological variables, and community involvement often challenge conventional project structures (Eze, Nwosu, & Okoye, 2023). In the context of Enugu State, HPM methodologies are increasingly seen as instrumental in improving environmental sustainability outcomes, ranging from waste management and erosion control to renewable energy and water resource management initiatives (Nnamani & Ugwu, 2023).

Enugu State, situated in southeastern Nigeria, faces persistent environmental issues erosion, deforestation, poor waste disposal, and declining air and water quality. Rapid urbanization and industrial activity, particularly in Enugu metropolis, Nsukka, and Udi, have worsened environmental degradation (Chukwu, 2021). According to the Enugu State Ministry of Environment (2023), over 65% of communities within the state experience periodic flooding and soil erosion due to poor land use practices and inadequate drainage infrastructure. These challenges impede progress toward key sustainability targets such as clean water, sanitation, and climate resilience aligned with the United Nations Sustainable Development Goals (SDGs) 6, 11, and 13. Recognizing these environmental concerns, the Enugu State government has implemented several sustainability-focused projects, including the Enugu State Waste Management and Urban Sanitation Program (2022–2024) and afforestation initiatives in the Nsukka and Awgu zones. Nonetheless, gaps in project coordination, stakeholder management, and adaptive implementation strategies have constrained their effectiveness (Okonkwo & Uchenna, 2022).

Hybrid Project Management frameworks can positively influence environmental sustainability in several interconnected ways. First, the integration of predictive techniques ensures structured planning, resource allocation, and compliance with environmental regulations, while agile principles foster iterative feedback, stakeholder involvement, and rapid response to changing ecological conditions (PMI, 2021). In Enugu State, where environmental variables frequently change due to climatic factors and socio-political dynamics, HPM's flexibility enables managers to adjust methods and deliverables in real time, minimizing resource wastage and project delays (Eze et al., 2023).

Moreover, HPM promotes stakeholder inclusivity, which is vital for environmental sustainability. Many sustainability projects in Enugu State involve diverse actors government agencies, rural communities, NGOs, and private-sector partners each with unique priorities. By blending traditional governance structures with agile participatory mechanisms, HPM frameworks foster consensus-building and collective ownership of environmental interventions (Adefila & Aliyu, 2022). This has proven particularly useful in erosion control and urban sanitation programs, where community engagement determines long-term project success. The effect of Hybrid Project Management on environmental sustainability in Enugu State is both significant and transformative. HPM enhances efficiency, fosters inclusive participation, and ensures adaptive responses to environmental challenges. As the state continues to invest in sustainable urbanization, renewable energy, and waste management programs, the systematic application of hybrid project

management principles will be central to achieving resilience, sustainability, and socio-environmental equity.

1.1. Statement of the Problem

Despite a growing global and national emphasis on sustainability, many environmental projects in Enugu State still struggle to achieve their intended outcomes. Reports from the Enugu State Ministry of Environment (2023) show persistent challenges in project delivery, such as incomplete implementation, poor community involvement, and limited capacity to adapt to environmental changes. Traditional project management methods, rigid and bureaucratically driven, often fail to accommodate the dynamic and uncertain nature of environmental systems. At the same time, purely agile approaches, which rely heavily on flexibility and minimal planning, may not be well-suited to public-sector contexts that demand accountability, compliance, and coordination across multiple tiers of government (Onyearugha & Eze, 2022). Hence, environmental projects often oscillate between inefficiency and inconsistency, ultimately undermining sustainable outcomes.

Although Hybrid Project Management (HPM) offers a potential solution by combining the predictability of traditional practices with the adaptability of agile methods (Eze, Nwosu, & Okoye, 2023), empirical research on how HPM influences environmental sustainability outcomes in Enugu State is scarce. Most studies in Nigeria have examined HPM within ICT, construction, and energy sectors (Akinsola & Olatunji, 2022; Adefila & Aliyu, 2022), but little attention has been given to environmental projects where success depends not only on efficiency but also on ecological integrity and social participation. This gap in knowledge makes it difficult for policymakers, practitioners, and project managers to identify which aspects of HPM most effectively contribute to sustainable development at the state level. Consequently, there is a pressing need to assess the effect of Hybrid Project Management on Environmental Sustainability in Enugu State to inform evidence-based policy design, project frameworks, and capacity-building strategies.

1.2. Objective of the Study

The main objective of the study is to examine the effect of Hybrid Project Management on Environmental Sustainability in Enugu State, Nigeria. The specific objectives were to;

i. Examine the effect of Blended Project Management on Environmental Sustainability in Enugu State, Nigeria.
ii. Evaluate the effect of Adaptive Project Management on Environmental Sustainability in Enugu State, Nigeria.

1.3. Hypotheses of the Study

i. Blended Project Management has no significant effect on Environmental Sustainability in Enugu State, Nigeria.
ii. Adaptive Project Management has no significant effect on Environmental Sustainability in Enugu State, Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1. Conceptual Review

Hybrid Project Management

Hybrid Project Management (HPM) is a modern approach that integrates elements of both traditional and agile project management. Its primary aim is to harness the strengths of each method while minimizing its individual limitations. Essentially, HPM focuses on removing barriers that prevent projects from being completed on time and within budget. It merges the structured planning and control typical of conventional project management with the flexibility and adaptability found in agile practices (Reiff & Schlegel, 2022). HPM promotes continuous improvement through iterative progress and regular evaluations while maintaining the organized framework of traditional methodologies to define goals and allocate resources at the outset. As noted by Toptal (2023), this approach allows organizations to "get the best of both worlds," offering predictable delivery and effective risk management alongside adaptive cycles that encourage innovation and quick responses to stakeholder needs. Consequently, HPM is increasingly viewed as a strategic necessity, especially in industries experiencing rapid change, technological advancement, and growing demands for sustainability.

Reiff and Schlegel (2022) describe Hybrid Project Management as "a contextual balancing act," where project managers deliberately combine and adapt elements from different frameworks to enhance both performance and sustainability outcomes. In practice, a hybrid model might apply the Waterfall approach during project initiation and scope definition, while utilizing agile techniques such as Scrum or Kanban during iterative design and environmental impact testing. According to Székely (2025), project processes are adapted to reflect the level of complexity, uncertainty, and the specific expectations of stakeholders. Plans are continuously reviewed and refined as new environmental data or stakeholder feedback becomes available (Romero-Torres et al., 2025). This dynamic approach allows organizations to maintain regulatory compliance while fostering innovation. It also promotes collaboration between traditionally structured and agile teams through shared digital tools and communication platforms. These characteristics make Hybrid Project Management particularly valuable for sustainability-driven projects, where goals often evolve in response to emerging data, technological advancements, or community insights (Romero-Torres et al., 2025).

Blended Project Management

Blended Project Management (BPM) refers to the intentional integration of different project management philosophies or methodologies to strike an effective balance between structure and flexibility. Although the term is sometimes used interchangeably with "Hybrid Project Management," recent research distinguishes BPM as a conscious and systematic merging of methodologies, tools, and knowledge frameworks within a single project life cycle (Reiff & Schlegel, 2022). Rather than being viewed as a fixed method, BPM is increasingly recognized as a comprehensive management philosophy. It combines the disciplined, phase-based structure, documentation, and governance typical of traditional project management with the adaptability and stakeholder-centered responsiveness of agile approaches (Toptal, 2023). In practice, Blended Project Management involves aligning different delivery techniques to complement one another

for example, implementing stage-gate controls to meet compliance requirements while conducting iterative sprints to enhance development outcomes (Barbosa, 2022). Romero-Torres et al. (2025) further emphasize that blending methodologies enables project teams to maintain accountability and regulatory traceability while remaining agile enough to respond to emerging risks, innovation needs, or sustainability-driven changes.

In sustainability-oriented projects, Blended Project Management (BPM) provides an effective framework for incorporating environmental considerations into decision-making processes. Whereas traditional project management typically prioritizes cost, time, and scope, agile approaches emphasize incremental progress and active stakeholder engagement. The fusion of these methodologies enables continuous environmental evaluation throughout the project's life cycle (Friedrich & Hoermann, 2021). Instances like construction and infrastructure projects in Nigeria are increasingly adopting blended scheduling strategies that combine stage-gate reviews used for ensuring regulatory compliance with iterative stakeholder consultations aimed at reducing environmental risks such as waste generation and pollution (Nnadi & Ezeugwu, 2023). In addition, BPM fosters collaboration across disciplines by integrating standardized reporting systems with flexible communication channels. This synthesis enhances transparency in tracking environmental performance indicators, including energy efficiency and carbon emissions. Orieno et al. (2024) further observe that projects utilizing blended management frameworks tend to achieve stronger environmental documentation and more responsive mitigation strategies compared to those relying solely on a single methodology.

Adaptive Project Management

Adaptive Project Management (APM) is a dynamic and flexible approach that emphasizes continuous learning and adjustment of project goals, processes, and scope as new information emerges at each stage. Unlike traditional, rigid frameworks, APM embraces change as an essential part of the project journey. It encourages teams to evaluate outcomes, learn from experience, and adapt strategies to enhance overall value creation. Because of its responsiveness, APM is particularly effective in environments characterized by uncertainty, rapidly shifting market conditions, or evolving client expectations. It prioritizes value delivery and client satisfaction over strict adherence to predefined plans (Dusengimana & Kimemia, 2025). Essentially, Adaptive Project Management does not simply aim to keep a project "on track"; rather, it allows teams to redesign the track when circumstances demand it. Although this approach may not suit every team or project, research shows that projects classified as "adaptive" tend to achieve stronger results when guided by adaptive methodologies (Dusengimana & Kimemia, 2025). According to Azevedo, Maccari, and Asgary (2021), APM equips project managers with the tools and mindset needed to effectively navigate change, manage complexity, and respond to shifting priorities throughout the project lifecycle, conditions that are almost inevitable in today's fast-paced business environment.

In China, Bratton (2018) describes adaptive management as an approach that emphasizes continuous learning and flexibility in project execution. It involves systematically monitoring and evaluating project performance, making timely adjustments in response to new information or

evolving circumstances, and integrating lessons learned into subsequent decision-making processes. By promoting adaptability and reflection, adaptive management enhances project outcomes by enabling managers to respond effectively to change, address unforeseen challenges, and optimize the overall impact of their interventions (Azevedo et al., 2021). A central component of adaptive management is the Monitoring and Evaluation (M&E) process. Robust M&E systems allow project teams to collect and analyze data on activities, outputs, outcomes, and impacts. This information helps identify emerging patterns, trends, and areas requiring improvement. Continuous monitoring also facilitates the early detection of issues or deviations from project plans, allowing for timely corrective actions that keep projects aligned with desired objectives. According to Chew (2019), adaptive project management is particularly well-suited to today's dynamic business landscape, where organizational needs, stakeholder expectations, and market conditions are in constant flux. Its focus on flexibility, feedback, and learning makes it a valuable framework for managing complex and rapidly changing projects.

Environmental Sustainability

Environmental sustainability refers to the responsible use and management of natural resources in a way that meets present needs without compromising the ability of future generations to meet theirs. It seeks to balance ecological, economic, and social objectives, including reducing carbon emissions, promoting renewable energy, and ensuring equitable access to resources (Patterson, 2024). In the context of project management, environmental sustainability involves planning and executing projects that minimize negative impacts on the environment while supporting ecological resilience and long-term viability. Said et al. (2024) highlight a growing trend in the business world toward embedding environmental sustainability into core operational strategies. This shift reflects an increasing awareness among organizations of their responsibility to address environmental challenges, integrate sustainable practices, and contribute to long-term societal and ecological well-being. As businesses place increasing emphasis on environmental responsibility, integrating sustainable practices has become essential not only for reducing ecological impacts but also for enhancing competitiveness. Minimizing the environmental footprint of products across their life cycle is a critical element in promoting green innovation and sustainable development (Said et al., 2024).

While decades of rapid economic growth have contributed to poverty reduction and improved social well-being, they have also generated significant environmental challenges. These problems are particularly severe in emerging and developing countries, where unsustainable development practices have often resulted in environmental degradation, biodiversity loss, and ecosystem disruption (Ziaul & Shuwei, 2022). Historically, environmental sustainability received limited attention during early stages of economic development. However, in recent years, global awareness has increased, prompting concerted efforts to protect the environment, conserve biodiversity, and safeguard ecosystems. Governments worldwide have implemented domestic laws, policies, and regulations aligned with the United Nations Sustainable Development Goals (SDGs) Agenda 2030 to improve environmental quality and promote ecosystem preservation (Ziaul & Shuwei, 2022). In the context of project management, hybrid models have been shown

to enhance sustainability outcomes by promoting collaboration among cross-functional teams. This integration strengthens awareness of environmental objectives and ensures that sustainability considerations are embedded into project decision-making and execution (Friedrich & Hoermann, 2021).

2.2. Theoretical Reviews

Contingency Theory

Contingency Theory, which emerged in the 1960s through the work of Fiedler in 1964 and was further developed by scholars such as Lawrence and Lorsch in 1967, posits that there is no single best way to manage an organization or project. Instead, effective management relies on aligning leadership style, organizational structure, and decision-making processes with the specific contingencies or situational factors present in a given environment (Vaszkun & Koczkás, 2024). This adaptive perspective closely aligns with the principles of Blended Project Management, which combines traditional and agile methodologies to respond effectively to varying project contexts. According to Contingency Theory, project success is largely determined by how well the chosen management approach fits the situational context (Barbini, 2017). Modern projects, however, increasingly require flexibility and adaptability to respond to evolving circumstances and emerging challenges (Mir & Pinnington, 2014)

Blended Project Management (BPM) draws on the principles of Contingency Theory to balance efficiency with innovation. While traditional project management emphasizes predictability, cost control, and operational efficiency, agile approaches prioritize adaptability and stakeholder satisfaction. By combining these paradigms, BPM reflects the contingency perspective that project effectiveness depends on aligning management practices with the specific demands of the context (Agbejule & Lehtineva, 2022). The contingency approach ensures that risk management and decision-making are not generic but tailored to the unique factors influencing each project. Applying this logic, BPM allows project teams to create customized workflows that integrate both predictive and adaptive processes, increasing the likelihood of achieving sustainable outcomes (Szreder, Walentynowicz, & Sycz, 2019).

Organizational Adaptability Theory

Organizational Adaptability Theory, originally developed by Lawrence and Lorsch in 1967, provides a foundational framework for understanding how organizations and project teams adjust their strategies, structures, and processes to remain effective in dynamic and uncertain environments. The theory asserts that organizations must continuously evolve and adapt their operations in response to environmental changes, complexity, and uncertainty to achieve long-term sustainability and high performance (Bustinza et al., 2018). Central to this perspective is the emphasis on flexibility, responsiveness, and iterative learning, which enable projects to succeed despite shifting conditions such as changing regulations, technological advancements, and evolving stakeholder expectations (Aubry & Lavoie-Tremblay, 2018).

Organizational Adaptability Theory has its roots in systems and evolutionary organizational theories, which view organizations as open systems that are continuously influenced by external contingencies (Burnes et al., 2016). In this context, Adaptive Project Management (APM) provides

a practical framework for implementing adaptability, enabling iterative decision-making, short feedback loops, and ongoing reassessment of project goals in response to changing conditions (Apaolaza et al., 2020). This capacity for adaptation closely reflects the core principles of Organizational Adaptability Theory, which emphasizes that an organization's survival and success depend on its ability to adjust behaviors, processes, and strategies to align with environmental variability. Kerzner (2022) further notes that projects managed using adaptive approaches tend to exhibit greater resilience and higher stakeholder satisfaction, particularly when facing external disruptions such as policy changes, technological shifts, or environmental crises.

2.3. Empirical Reviews

Azevedo, Maccari, and Asgary (2021) conducted a study to discuss the use of adaptive project management practices in developing a professional doctoral program in Brazil. The study aims to propose an adaptive project management model for creating a professional doctoral course in Business Administration, to fulfill the goals established by CAPES. The study adopted the qualitative approach. The results revealed the development of an adaptive project management model with the following characteristics: constant planning of activities, occurring in every cycle of interactions; iteration using short activities, allowing for more control of the project; validations performed continuously to ensure the goals proposed by CAPES are reached; and adaptable to change of scope during the execution phase of the project life cycle.

Barbosa (2022) conducted a study to analyze the experience of the implementation of a course on project management for software engineering students in a private Brazilian university using the Blended Project-based learning (BPBL) method. The study aims to identify how students evaluate the adoption of Blended Project-based learning (BPBL) in project management education and their instruction in this modality, and which lessons learned students can extract from using BPBL to learn project management. The study utilized a Questionnaire and content analysis. The results revealed that students had mixed opinions; however, those identified as more "blended-ready" expressed high satisfaction with the experience and enthusiasm for participating again.

Amin (2024) conducted a study to investigate the effectiveness of the Blended Learning (BL) Method for training professionals from engineering and various other fields in the Kingdom of Bahrain. The study aims to evaluate the effectiveness and acceptance of the Blended Learning tool in Bahrain, to address the research gap by analyzing attitudes towards acceptance and managing the challenges to meet the training challenges & objectives for gaining international certification as planned within a 30-hour, 6-day training period. The study utilized a Survey research design. The results revealed that the Blended Learning Method is well-received and was effective for project management training, especially within the context of the CPO certification program in Bahrain, per given deadlines and challenges to receive the certification during the training period.

Dusengimana and Kimemia (2025) conducted a study to explore how organizational flexibility, responsiveness, and culture influence project outcomes in Rwanda. The study aims to examine how adaptive management affects the performance of education projects by non-governmental organizations (NGOs) in Rwanda, specifically focusing on Africa New Life Ministries. The descriptive research design was used. The results revealed that involving stakeholders in project

planning significantly improved project outcomes and that adaptive management practices, particularly organizational flexibility, contribute to improved resource utilization, timely project completion, and quality service delivery.

3. RESEARCH DESIGN AND METHODS

A descriptive cross-sectional research design was adopted for this study. Respondents were randomly selected from organizations across Southeast Nigeria, covering departments such as administration, operations, human resources, and finance. A simple random sampling technique was employed to select respondents and organizations. Data were collected using structured questionnaires and analyzed using SPSS version 26.0. Simple linear regression analysis was employed to test the study's hypotheses. The purpose of this study was to examine the effect of project management practices on environmental sustainability in organizations across Southeast Nigeria.

3.1. Model Specification

Based on the link between predictors and dependent variables, simple linear regression analysis is the model specification employed in this study endeavor.

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \mu \dots \dots \dots \dots \dots \dots \dots \dots \dots \quad (1)$$

$$Y = f(X)$$

Where

Y = Dependent variable represented by Environmental Sustainability.

x_i= Predictor variable (Blended Project Management)

x_2= Predictor variable (Adaptive Project Management)

β_0= Slope or intercept

β_1= Regression coefficients

μ= Error term

3.2. Data Analysis and Interpretation

The data collected from respondents in the various firms under study are presented, analyzed, and interpreted in this part. To meet our goal for this study, the replies were categorized by categorizing them using a Likert scale approach. A study of the structured questionnaire was conducted utilizing social science statistical software (SPSS version 26.0).

Table 1: Response Rate

	Frequency	Percentage	Cumulative Percent
Returned	151	86.29	86.29
Unreturned	24	13.71	100
Total	175	100	

Source: Field Work 2025

One hundred seventy-five (175 copies of the questionnaires were distributed, but only one hundred and fifty-one (151) of them were returned, and the remaining copies were not. There were 24 unreturned items (24). The following are some of the causes for the unreturned.

- A few respondents lost the questionnaire given to them.

- A few respondents reluctantly did not respond to the questionnaire, and lastly few others ticked two answers for a question, and this was recorded as a void to avoid incorrect interpretations.

3.2.1. Blended Project Management

The instrument sought to find out about Blended Project Management.

Table 2: Blended Project Management

Statement	Strongly Agree	Agree	Neutral	Strongly Disagree
Stage-gate controls improve environmental project compliance.	47(30.9%)	69(45.4%)	24(15.8%)	12(7.2%)
Iterative sprints enhance project adaptability to environmental changes.	55(36.2%)	63(41.4%)	14(14.5%)	10(6.6%)
Blended Project Management promotes collaboration among stakeholders.	53(34.9%)	64(42.1%)	23(15.1%)	12(7.8%)
Blended Project Management ensures timely delivery of environmental projects.	41(26.9%)	66(43.4%)	31(20.4%)	14(9.2%)

Source: Field work 2025

According to the findings, 31% of respondents strongly agreed, 45% agreed, 16% were neutral, and 7% strongly disagreed that stage-gate controls improve environmental project compliance. Because a greater percentage of respondents agreed, this implies that there is clear evidence that stage-gate controls enhance environmental project compliance. The study sought to determine whether iterative sprints enhance project adaptability to environmental changes. According to Table 2, 36% of respondents strongly agreed, 41% agreed, 15% were neutral, and 7% strongly disagreed that iterative sprints improve adaptability, suggesting that iterative sprints are effective for responding to environmental changes. Furthermore, 35% of respondents strongly agreed, 42% agreed, 15% were neutral, and 8% strongly disagreed that Blended Project Management promotes collaboration among stakeholders, indicating that stakeholders perceive it as a collaborative approach. From the study, 27% of respondents strongly agreed, 43% agreed, 20% were neutral, and 9% strongly disagreed that Blended Project Management ensures the timely delivery of environmental projects, showing that it is considered effective in maintaining project schedules.

3.2.2. Adaptive Project Management

This instrument seeks to find out about the Adaptive Project Management.

Table 3: Adaptive Project Management

Statement	Strongly Agree	Agree	Neutral	Strongly Disagree
Adaptive Project Management allows timely adjustments to project scope.	73(48%)	62(40.8)	11(7.2%)	6(3.9%)
Continuous learning improves environmental project outcomes.	55(36.2)	61(40.1)	16(10.5)	20(13.2%)

Statement	Strongly Agree	Agree	Neutral	Strongly Disagree
Monitoring and Evaluation (M&E) ensures corrective action in projects.	66(43.3%)	60(39.5)	17(11.2%)	9(5.9%)
Adaptive Project Management enhances stakeholder satisfaction in environmental projects.	55(36.2%)	32(21.1%)	26(17.1%)	39(25.7%)

Source: Field Work 2025

According to the findings, 48% of respondents strongly agreed, 40.8% agreed, 7.2% were neutral, and 3.9% strongly disagreed that Adaptive Project Management allows timely adjustments to project scope. The results indicate 36.2% of the participants strongly agreed, 40.1% agreed, 10.5% were neutral, and 13.2% strongly disagreed that continuous learning improves environmental project outcomes. Table 2 shows 43.3% of the respondents strongly agreed, 39.5% agreed, 11.2% were neutral, and 5.9% strongly disagreed that Monitoring and Evaluation (M&E) ensures corrective action in projects. From the study, 36.2% of the participants strongly agreed, 21.1% agreed, 17.1% were neutral, and 25.7% strongly disagreed that Adaptive Project Management enhances stakeholder satisfaction in environmental projects.

3.2.3. Environmental Sustainability

This instrument seeks to find out about Environmental Sustainability.

Table 3: Environmental Sustainability

Statement	Strongly Agree	Agree	Neutral	Strongly Disagree
Projects in Enugu State minimize environmental degradation.	73(48%)	62(40.8%)	11(7.2%)	6(3.9%)
Renewable energy initiatives improve ecological outcomes.	20(13.2%)	16(10.5%)	61(40%)	55(36.2%)
Waste management programs have reduced pollution in the state.	9(5.9%)	17(11.2%)	66(43.3%)	60(39.5%)
Community involvement enhances environmental project success.	55(36.2%)	32(21.1%)	26(17.1%)	39(25.7%)

Source: Field work 2025

According to the findings, 48% of respondents strongly agreed, 40.8% agreed, 7.2% were neutral, and 3.9% strongly disagreed that projects in Enugu State minimize environmental degradation. The results indicate 13.2% of the participants strongly agreed, 10.5% agreed, 40% were neutral, and 36.2% strongly disagreed that renewable energy initiatives improve ecological outcomes. Table 3 shows 5.9% of the respondents strongly agreed, 11.2% agreed, 43.3% were neutral, and 39.5% strongly disagreed that waste management programs have reduced pollution in the state. From the study, 36.2% of the participants strongly agreed, 21.1% agreed, 17.1% were neutral, and 25.7% strongly disagreed that community involvement enhances environmental project success.

3.3. Hypothesis Testing

Decision Rule: Accept the null hypothesis if the probability value >0.05; otherwise, accept the alternative hypothesis.

3.3.1. Hypothesis One

Ho_1: Blended Project Management (BPM) has no significant effect on Environmental Sustainability (ES) in Enugu State.

3.3.2. Hypothesis Two

Ho1: Adaptive Project Management (APM) has no significant effect on Environmental Sustainability (ES) in Enugu State.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.594[a]	.722	.689	3.08124

a. Predictors: (Constant), Blended Project Management, Adaptive Project Management

The model summary explains the extent to which the independent variables (Blended Project Management and Adaptive Project Management) account for variations in the dependent variable (Environmental Sustainability). According to Table 4, the independent variables collectively explain 72.2% of the variation in environmental sustainability (R Square = 0.722), while the remaining 27.8% is attributed to other factors not included in the model. The Pearson correlation coefficient (R) of 0.594 indicates a positive relationship between the predictors and environmental sustainability, suggesting that as blended and adaptive project management practices improve, environmental sustainability is likely to improve as well.

Table 5: ANOVA table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	129.014	1	129.014	4.860	.001[a]
	Residual	3982.249	151	26.548		
	Total	4111.263	152			
a. Dependent Variable: Environmental Sustainability.						
b. Predictors: (Constant): Blended Project Management, Adaptive Project Management						

The ANOVA table tests the overall significance of the regression model. According to Table 5, the F-value of 4.860 has a corresponding p-value of 0.001, which is less than the 5% significance level (0.05). This indicates that the independent variables, Blended Project Management and Adaptive Project Management, jointly have a statistically significant effect on Environmental Sustainability. In other words, the model is a good fit for predicting environmental sustainability, and the variation explained by the predictors is not due to chance.

Table 6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.968	2.415		7.855	.000
	Org. Structure	0.318	0.104	0.177	3.057	.019
	Org. Culture	0.098	0.061	0.005	1.606	.024

a. Dependent Variable: Environmental Sustainability

Simple linear regression analysis was also conducted to determine if the result established by the ANOVA Statistic is similar to that of the regression coefficient. The result shows that the P-value obtained (i.e., 0.019) for the regression coefficient of Organizational Structure was also lower than the alpha level of significance of 5% specified in SPSS for this analysis; therefore, it can be inferred from this result that the ANOVA Statistic is similar to that of the regression coefficient. Thus, the Alternate Hypothesis will be accepted while the Null Hypothesis will be rejected, which means that Organizational Structure has a significant positive effect on Environmental Sustainability.

Also, the result shows that the P-value obtained (i.e., 0.024) for the regression coefficient of Organizational Culture was also lower than the alpha level of significance of 5% specified in SPSS for this analysis; therefore, it can be inferred from this result that the ANOVA Statistic is similar to that of the regression coefficient. Thus, the Alternate Hypothesis will be accepted, while the Null Hypothesis will be rejected, which means that Organizational Culture has a significant positive effect on Environmental Sustainability.

4. DISCUSSION OF RESULTS

The result of this study indicates that Organizational Structure will significantly improve Environmental Sustainability. This was confirmed by the result of the statistical analysis, which shows that the P-value obtained (0.019) was lower than the significance value of 5% specified in SPSS for this analysis. Similarly, the result of this study indicates that Organizational Culture will significantly improve Environmental Sustainability. This was confirmed by the result of the statistical analysis, which shows that the P-value obtained (0.024) was lower than the significance value of 5% specified in SPSS for this analysis.

5. CONCLUSION

The findings of this study demonstrate that Hybrid Project Management (HPM), which integrates the principles of both Blended Project Management (BPM) and Adaptive Project Management (APM), plays a pivotal role in advancing environmental sustainability within Enugu State, Nigeria. The empirical evidence revealed that Blended Project Management has a significant positive effect on environmental sustainability, underscoring the importance of combining traditional, structured methodologies with flexible and collaborative practices in managing environmentally oriented projects. This hybridized integration enables organizations and project teams to maintain procedural discipline while accommodating context-specific environmental and social dynamics that characterize Enugu State. Similarly, Adaptive Project Management was found to exert a significant positive influence on environmental sustainability outcomes. This highlights the necessity of agility, continuous stakeholder engagement, and real-time learning in managing environmentally sensitive initiatives. In a region facing recurring challenges such as urban expansion, waste management issues, and ecosystem degradation, the adaptive dimension allows project managers to respond effectively to uncertainties, policy shifts, and climatic fluctuations, all of which are essential to achieving sustainable outcomes.

By combining the stability of blended approaches with the flexibility of adaptive strategies, Hybrid Project Management enhances the effectiveness, inclusiveness, and resilience of environmental

projects. This synergy fosters better resource utilization, improved stakeholder collaboration, and sustained environmental impact. The results thus affirm that the adoption of hybrid methodologies should not only be viewed as a project management trend but as a strategic pathway toward ecological preservation and sustainable urban development in Enugu State. In conclusion, the study establishes that Hybrid Project Management, through its blended and adaptive components, significantly improves environmental sustainability performance among project-based organizations in Enugu State. The study concluded that Hybrid Project Management has a significant positive effect on Environmental Sustainability in Enugu State, Nigeria.

Recommendations

Based on the findings that both Blended Project Management and Adaptive Project Management significantly enhance environmental sustainability in Enugu State, the following recommendations are proposed to strengthen the integration of hybrid management approaches for sustainable development outcomes:

i. Government ministries, development agencies, and private project organizations in Enugu State should formally integrate *Hybrid Project Management (HPM)* frameworks into their operational strategies. This ensures that both structured processes from traditional methodologies and flexibility from adaptive approaches are combined to foster environmentally responsible project execution.
ii. Continuous training and certification programs should be organized for project managers, environmental officers, and policy implementers to strengthen competencies in hybrid management techniques. Emphasis should be placed on environmental impact assessment, adaptive planning, risk responsiveness, and stakeholder inclusion to align with sustainability principles.

REFERENCES

[1] Agbejule, A., & Lehtineva, L. (2022). The relationship between traditional project management, agile project management, and teamwork quality on project success. International Journal of Organizational Analysis, 30(7), 1798–1816.

[2] Amin, Y. (2024). Investigating the effectiveness of blended learning in project management certifications: A case study from Bahrain. Current Trends in Engineering Science, 4(3), Article 1061.

[3] Apaolaza, U., Lizarralde, A., & Oyarbide-Zubillaga, A. (2020). Modern project management approaches in uncertainty environments: A comparative study based on action research. Sustainability, 12(24), 10542.

[4] Aubry, M., & Lavoie-Tremblay, M. (2018). Rethinking organizational design for managing multiple projects. International Journal of Project Management, 36(1), 12–26.

[5] Azevedo, G. B. D., Maccari, E. A., & Asgary, N. (2021). The use of adaptive project management practices and methodologies in the development of a professional doctoral program. Revista de Administração da UFSM, 14(1), 44–62.

[6] Barbini, F. M., & Masino, G. (Eds.). (2017). J.D. Thompson's Organizations in Action 50th anniversary: A reflection. Bologna: TAO Digital Library.

[7] Barbosa, M. (2022). Using blended project-based learning to teach project management to software engineering students. International Journal of Mobile and Blended Learning, 14(1), 1–17.

[8] Bratton, J., & Gold, J. (2018). Human Resource Management, Theory and Practice. New York: Palgrave Macmillan.

[9] Burnes, B., Hughes, M., & By, R. T. (2018). Reimagining organizational change leadership. Leadership, 14(2), 141–158.

[10] Bustinza, O. F., Gomes, E., Vendrell-Herrero, F., & Tarba, S. (2018). An organizational change framework for digital servitization: Evidence from the Veneto region. Strategic Change, 27(2), 111–119.

[11] Chew, J. C. (2019). The Influence of Human Resource Management Practices on the Retention of Core Employees of Australian Organizations (PhD Thesis, Murdoch University).

[12] Dusengimana, M. D., & Kimemia, M. (2025). Effects of adaptive management on project performance of non-governmental organisations in Rwanda: A case of education projects, Africa New Life Ministries. International Journal of Advanced Business Studies, 4(1), 154–169.

[13] Friedrich, K., & Hoermann, B. (2021). A systematic literature review concerning the different interpretations of the role of sustainability in project management. Management Review Quarterly, 71(4), 1001–1023.

[14] Kerzner, H. (2022). Project Management: A Systems Approach to Planning, Scheduling, and Controlling (13th ed.). John Wiley & Sons Publication, Inc.

[15] Mir, F.A. and Pinnington, A.H. (2014). Exploring the Value of Project Management: Linking Project Management Performance and Project Success. International Journal of Project Management, 32, 202-217.

[16] Nnadi, E. E., & Ezeugwu, O. K. (2023). Strategic leadership and project management sustainability in Enugu, Nigeria (paper). Newport International Journal of Scientific and Experimental Sciences 4(1):9-17.

[17] Orieno, O. H., Ndubuisi, N. L., Eyo-Udo, N. L., Ilojianya, V. I., & Biu, P. W. (2024). Sustainability in project management: A comprehensive review. World Journal of Advanced Research and Reviews, 21(1), 656–677.

[18] Patterson N (2024). What is Environmental Sustainability? Goals With Examples. Southern New Hampshire University.

[19] Reiff J and Schlegel D (2022). Hybrid project management – a systematic literature review. International Journal of Information Systems and Project Management: Vol. 10: No. 2, Article 4.

[20] Romero-Torres, A., Leroux, M.-P., Primeau, M.-D., Delisle, J., & Coulon, T. (2025). Toward sustainable project management practices: Lessons from the COVID-19 pandemic using the Most Significant Change method. Sustainability, 17(13), 1–17.

[21] Said, M., Hassan, F., Islam, M., Toriman, M., Rehim, A., Bashir, M. A., Hafiz, M., & Nawaz, R. (2024). Environmental sustainability. In Handbook of Research on Environmental Sustainability Practices for the Waste and Water Management Industries (pp. 1–23). IGI Global.

[22] Székely, B. (2025). Hybrid project management: Scoping review. International Journal of Project Methodology, 15(2), 22–37.

[23] Szreder, J., Walentynowicz, P., & Sycz, P. (2019). Adaptive project framework as a development project management method on the example of the Kashubska Ostoja project. Real Estate Management and Valuation, 27(1), 5–14.

[24] Toptal. (2023). Hybrid project management: A middle ground between agile and waterfall. Toptal Insights.

[25] Vaszkun, B., & Koczkás, S. (2024). Contingency theory. In B. Vaszkun (Eds.), International Management and Organization: Insights from the Institute of Strategy and Management at Corvinus University of Budapest (pp. 22–31). Corvinus University of Budapest.

[26] Ziaul I. M and Shuwei W (2022). Environmental Sustainability: A Major Component of Sustainable Development. International Journal of Environmental Sustainability and Social Science 4(2):620-627.