


Original Article

## CONSTRUCTING THE NEW VS. CONSERVING THE OLD: COMPARING CONSTRUCTION AND CONSERVATION WITHIN THE PROJECT MANAGEMENT PROCESS GROUPS

Mehmet Emre Aktuna <sup>1\*</sup> 

<sup>1</sup>Independent Researcher, Turkey



### ABSTRACT

The management of architectural heritage conservation projects presents distinct challenges compared to conventional construction due to the need to preserve cultural significance, authenticity, and historical integrity. This study investigates how project management practices differ across the project life cycle in new construction and heritage conservation, addressing the research question of how conventional project management frameworks can be adapted to better support conservation contexts. A qualitative comparative analysis was conducted based on a structured literature review, examining project management practices across initiation, planning, execution, monitoring and control, and closing phases. The findings reveal that conservation projects require adaptive approaches characterized by flexible scope management, contingency-based planning, specialized procurement, multidisciplinary collaboration, and stricter change control aligned with conservation principles. Based on these findings, the study proposes a tailored, phase-based project management framework that integrates conservation priorities into conventional project management structures. The framework provides a structured approach for addressing uncertainty, stakeholder complexity, and material constraints inherent in heritage projects. The study concludes that conventional project management frameworks, while useful, require systematic adaptation to effectively respond to the specific demands of conservation practice. The proposed framework offers practical guidance for professionals and contributes to improving the alignment between project management processes and heritage conservation objectives, while highlighting the need for future empirical validation.

**Keywords:** Heritage Conservation, Project Management, Construction Management

### INTRODUCTION

The preservation and conservation of architectural heritage have gained increasing importance as societies recognize the cultural, historical, and socioeconomic value of such assets [Liang et al. \(2023\)](#). Architectural heritage, including buildings, monuments, and sites, serves as a tangible link to the past, preserving cultural identity and traditional craftsmanship [Sayigh \(2019\)](#). However, heritage conservation presents distinct challenges compared to new construction, which prioritizes functionality, efficiency, and compliance with modern standards, whereas conservation emphasizes authenticity, integrity, and sustainability.

In rapidly urbanizing contexts, new construction responds to growing demands in sectors such as education, healthcare, and housing, focusing on safety, energy efficiency, and technological integration [Rushton \(2022\)](#), [Kutsevych and Tyshkevych \(2022\)](#). In

#### \*Corresponding Author:

Email address: Mehmet Emre Aktuna ([meaktuna@gmail.com](mailto:meaktuna@gmail.com))

Received: 18 March 2026; Accepted: 20 April 2026; Published 30 May 2026

DOI: [10.29121/ijetmr.v13.i5.2026.1762](https://doi.org/10.29121/ijetmr.v13.i5.2026.1762)

Page Number: 49-58

Journal Title: International Journal of Engineering Technologies and Management Research

Journal Abbreviation: Int. J. Eng. Tech. Mgmt. Res.

Online ISSN: 2454-1907

Publisher: Granthaalayah Publications and Printers, India

Conflict of Interests: The authors declare that they have no competing interests.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' Contributions: Each author made an equal contribution to the conception and design of the study. All authors have reviewed and approved the final version of the manuscript for publication.

Transparency: The authors affirm that this manuscript presents an honest, accurate, and transparent account of the study. All essential aspects have been included, and any deviations from the original study plan have been clearly explained. The writing process strictly adhered to established ethical standards.

Copyright: © 2026 The Author(s). This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

With the license CC-BY, authors retain the copyright, allowing anyone to download, reuse, re-print, modify, distribute, and/or copy their contribution. The work must be properly attributed to its author.

contrast, heritage conservation seeks to protect and restore historical structures while retaining their cultural significance. It extends beyond material preservation to include intangible values and collective memory [Kubontubuh and Martokusumo \(2019\)](#), and aligns with sustainable development through cultural resource preservation [Khalil et al. \(2018\)](#). Conservation processes typically require collaborative stakeholder engagement, as reflected in international frameworks such as the Venice Charter and the Faro Convention [Petzet \(2004\)](#), [UNESCO \(2005\)](#), [Spiridon and Sandu \(2015\)](#).

Project management is central to both construction and conservation projects, yet approaches differ significantly across the project life cycle phases: initiation, planning, execution, monitoring, and closing. While construction projects emphasize cost-efficiency and regulatory compliance, conservation projects require adaptive and context-sensitive strategies aligned with conservation ethics and legal frameworks [Wells and Lixinski \(2016\)](#). Accordingly, developing integrated management approaches is essential to support the long-term sustainability of heritage assets within contemporary environments.

This study examines the project life cycle in new construction and heritage conservation, two domains that share foundational principles but differ in methodologies and constraints. Through a comparative framework based on project life cycle phases, the study identifies key similarities and differences in project management practices. Particular attention is given to the specific requirements of conservation projects, including the use of traditional materials, specialized expertise, and regulatory constraints.

The study aims to highlight how these differences influence project management strategies and to identify the adaptive approaches required in conservation contexts. It also considers the limitations of applying generalized project management frameworks to heritage projects, where uncertainty, material constraints, and authenticity requirements introduce additional complexity.

This study contributes by proposing a structured comparative framework for project management in construction and heritage conservation based on PMBOK process groups. Unlike existing studies that discuss conservation constraints in isolation, this study integrates these factors systematically into each project life cycle phase, providing a structured and operational framework for conservation-oriented project management.

## MATERIALS AND METHODS

This study adopts a qualitative comparative analysis framework to examine project management practices across the project life cycle in new construction and heritage conservation [Ragin \(2008\)](#). Supported by an exploratory literature review, the study synthesizes theoretical and practical insights from peer-reviewed articles, books, and conference proceedings [Frederiksen et al. \(2018\)](#), enabling a comparative understanding of conceptual and operational differences between the two domains.

A structured qualitative literature review was conducted to establish the theoretical foundation of the study. The review focuses on key contributions addressing project management practices in construction and architectural heritage conservation. Relevant sources were identified through major academic databases and publishers, including Google Scholar, Scopus, Web of Science, ScienceDirect, Emerald Insight, Elsevier, EBSCO, JSTOR, Taylor and Francis, ProQuest, Wiley Online Library, TRDizin, and Semantic Scholar. Keywords such as “project management,” “construction,” “conservation,” “project life cycle,” and “architectural heritage” were used in various combinations to capture relevant studies.

Studies were selected based on relevance, academic rigor, and thematic alignment. Inclusion criteria required explicit discussion of project management practices in construction or conservation, with particular emphasis on life cycle stages, process groups, and knowledge areas. Peer-reviewed articles, conference papers, and reputable book chapters were prioritized. The reviewed literature primarily spans foundational and contemporary studies without strict temporal limitation.

Thematic analysis was employed to identify patterns and differences between construction and conservation practices. The process involved familiarization with the literature, identification of recurring themes, and systematic coding of key concepts related to project phases and management practices. These codes formed the basis for comparative analysis across the project life cycle.

The literature selection focused on widely cited and thematically relevant sources to capture key theoretical and applied perspectives. The review was not intended to be exhaustive, and therefore does not follow a formal systematic review protocol. This approach allows for interpretative comparison across domains but may introduce selection bias. The findings should therefore be understood as a conceptual synthesis rather than a statistically representative analysis.

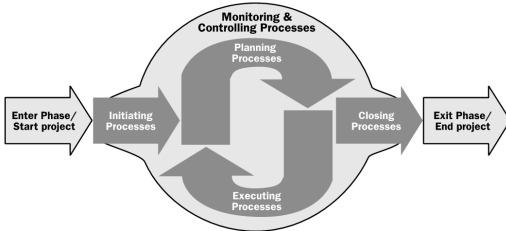
The analysis generated a structured framework highlighting methodological differences, challenges, and best practices in both domains. A phase-based comparative analysis was conducted to examine how project management practices differ across the life cycle, particularly in contexts where functional objectives must be balanced with cultural and heritage considerations [Keeves \(2001\)](#).

The qualitative comparative analysis is based on a purposive selection of literature representing key theoretical and applied contributions. The comparative framework was developed through thematic coding of project phases and associated management practices.

**COMPARATIVE ANALYSIS OF PROJECT LIFE CYCLE STAGES**

The comparative analysis is structured using the Project Management Institute’s (PMI) process groups and knowledge areas [Project Management Institute \(2017\)](#). These frameworks organize project management into five process groups—initiating, planning, executing, monitoring and controlling, and closing—alongside ten knowledge areas, including scope, cost, quality, risk, procurement, and stakeholder management. These structures provide a systematic basis for comparing construction and conservation practices [Figure 1, Figure 2](#).

**Figure 1**



**Figure 1 Project Management Process Groups [Project Management Institute \(2017\)](#)**

**Figure 2**

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
<b>4. Project Integration Management</b>	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
<b>5. Project Scope Management</b>		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
<b>6. Project Time Management</b>		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
<b>7. Project Cost Management</b>		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
<b>8. Project Quality Management</b>		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
<b>9. Project Human Resource Management</b>		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
<b>10. Project Communications Management</b>		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
<b>11. Project Risk Management</b>		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
<b>12. Project Procurement Management</b>		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
<b>13. Project Stakeholder Management</b>	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

**Figure 2 Project Management Process Group and Knowledge Area Mapping [Project Management Institute \(2017\)](#)**

The initiation phase defines project objectives and stakeholders. In construction, project charters emphasize measurable goals, efficiency, and regulatory compliance [Oberlender \(2000\)](#). In conservation, charters prioritize historical significance, condition assessment, and adherence to conservation principles such as reversibility and minimal intervention [ICOMOS \(2003\)](#). Stakeholder identification is broader in conservation, involving heritage authorities, communities, and cultural actors, requiring more inclusive engagement strategies [Atkin and Skitmore \(2008\)](#), [Vandesande et al. \(2018\)](#).

The planning phase establishes the project roadmap across knowledge areas. Planning includes defining roles, developing a staffing plan, and establishing communication protocols to ensure collaboration [Olanrewaju et al. \(2024\)](#). Construction planning focuses on defined scope, schedule, and cost efficiency [Clough et al. \(2000\)](#), [Lester \(2006\)](#). Planning in new construction includes sequencing activities, estimating resources and durations, and developing a detailed schedule and budget [Hribar and Asbury \(1985\)](#). In new construction, quality management focuses on meeting contemporary standards and client specifications. Planning involves setting quality objectives, defining quality assurance and control measures, and establishing criteria for acceptance [Rumane \(2017\)](#). In conservation, planning requires adaptive strategies due to uncertainties in existing structures, material constraints, and regulatory requirements [ICOMOS \(2003\)](#), [Rebec et al. \(2022\)](#). Scope management is more flexible, schedules and costs are less predictable, and procurement often involves specialized materials and expertise [Khan \(2006\)](#), [Toniolo et al. \(2014\)](#), [Roy and Kalidindi \(2017\)](#), [Smith \(2005\)](#). The scope management is more complex, requiring a balance between conservation and necessary modern interventions to maintain historical integrity in conservation. The WBS must reflect tasks sensitive to the building's existing conditions and historical significance [Vandesande et al. \(2018\)](#), [Almasifar et al. \(2021\)](#), [Mohamed et al. \(2021\)](#). Risk and stakeholder management are also more complex, requiring multidisciplinary collaboration [Mhetre et al. \(2016\)](#), [Vandesande et al. \(2018\)](#), [Majewski and Altschul \(2018\)](#).

The execution phase involves implementing project plans. Construction emphasizes efficiency, coordination, and compliance with standards [Bhuiyan \(2015\)](#). New construction projects generally require a team of architects, engineers, contractors, and labourers. The project manager is responsible for recruiting, developing, and managing the team to ensure efficient collaboration and high performance [Low \(2012\)](#). Heritage conservation, however, demands a specialized team that includes conservation experts, historians, and skilled artisans. Conservation focuses on preserving historical integrity through specialized techniques and expert involvement [Vandesande et al. \(2018\)](#), [Aktuna and Eskici \(2024\)](#). Quality assurance in conservation prioritizes compatibility of materials and adherence to conservation principles [ICOMOS \(2003\)](#), [Van et al. \(2015\)](#). Communication and stakeholder engagement are broader and more complex due to cultural considerations [Nwachukwu et al. \(2017\)](#); [Yang et al. \(2009\)](#). Procurement requires sourcing rare materials and skilled labour [Rotich et al. \(2021\)](#), [Toniolo et al. \(2014\)](#).

The monitoring and controlling phase ensures alignment with project objectives. Construction focuses on performance tracking, cost control, and efficiency [Burke \(2001\)](#), [Hendrickson and Au \(1989\)](#). This phase includes processes such as monitoring project work, performing integrated change control, and validating and controlling scope, schedule, costs, quality, communications, risks, procurements, and stakeholder engagement. [Taylor \(2008\)](#). Conservation requires continuous evaluation of interventions to maintain authenticity and structural integrity [Toniolo et al. \(2014\)](#), [Heras et al. \(2013\)](#). Change control is more restrictive due to heritage considerations [Hao et al. \(2008\)](#), [ICOMOS \(2003\)](#), [Aktuna and Eskici \(2024\)](#). Scope validation in new construction ensures that deliverables meet defined requirements, with regular reviews to confirm alignment with project objectives [Helgason \(2010\)](#). Project managers must maintain open, transparent communication to align conservation efforts with cultural goals and address stakeholder concerns [Vandesande et al. \(2018\)](#), [Taleb et al. \(2017\)](#). Quality, risk, and procurement controls must address uncertainties related to materials and historical conditions [O'Brien \(2013\)](#), [Jigyasu \(2005\)](#), [Reyers and Mansfield \(2001\)](#), [Abazid and Harb \(2018\)](#). Unforeseen discoveries or the need for specialized materials can lead to delays and increased costs. Flexible contingency plans are necessary to adapt to these uncertainties [Toniolo et al. \(2014\)](#), [Apollo et al. \(2018\)](#).

The closing phase finalizes project activities. This phase involves processes such as closing the project or phase and concluding procurements [Martinelli and Milosevic \(2015\)](#). In construction, this involves verifying completion, formal acceptance, and documentation [Sena-Mawuli \(2021\)](#). In conservation, closing includes detailed documentation of interventions, stakeholder approval, and ensuring compliance with conservation standards [Vandesande et al. \(2018\)](#), [Aktuna and Eskici \(2024\)](#). Procurement closure may involve ongoing maintenance considerations due to the long-term nature of heritage preservation [Toniolo et al. \(2014\)](#).

## RESULTS AND DISCUSSIONS

The analysis identifies phase-specific findings on how conservation projects require adaptations to conventional project management practices in order to achieve sustainable and context-sensitive outcomes.

### FINDINGS ON THE INITIATION PHASE

#### 1) Developing Charter

The analysis indicates that a conservation project charter should prioritize historical, cultural, and aesthetic values while incorporating authenticity, minimal intervention, and reversibility. It should also define applicable conservation standards, legal

requirements, and the existing condition of the building. Sustainability considerations, including locally sourced materials, environmentally responsible practices, and adaptive reuse, should be integrated where they do not compromise heritage integrity.

## **2) Identifying Stakeholders**

Findings suggest that conservation projects involve a broader and more diverse stakeholder environment than conventional construction. Heritage authorities, historians, local communities, and cultural organizations may hold differing expectations and values. Effective stakeholder mapping, early collaboration, transparent communication, and participatory mechanisms support compliance, reduce conflict, and strengthen long-term support.

## **FINDINGS ON THE PLANNING PHASE**

### **1) Developing the Project Management Plan**

The analysis indicates that conservation planning should be tailored to historical and cultural preservation requirements while meeting regulatory obligations. Structural assessment, historical research, phased planning, expert consultation, and team familiarity with conservation protocols are central to effective planning.

### **2) Scope Management**

Findings suggest that conservation scope must remain controlled but flexible, as unexpected discoveries such as artifacts, hidden damage, or structural deficiencies may require adaptation. Embedded contingencies, specialist input, and systematic documentation are necessary to maintain clarity and accountability.

### **3) Schedule and Cost Management**

The analysis indicates that conservation projects are especially vulnerable to delays and cost increases due to structural uncertainty, rare materials, and approval processes. Flexible schedules, contingency budgets, early procurement, and detailed cost estimation improve planning resilience.

### **4) Quality Management**

Findings suggest that quality management in conservation should prioritize authenticity, reversibility, minimal intervention, and material compatibility. Quality plans aligned with conservation principles and supported by audits and non-invasive inspection methods help maintain consistency.

### **5) Human Resource and Communication Management**

The analysis indicates that conservation projects require multidisciplinary teams with shared understanding of heritage objectives. Clear communication channels, regular coordination, and stakeholder-oriented communication materials support both internal collaboration and external engagement.

### **6) Risk Management**

Findings suggest that conservation risks include structural instability, environmental exposure, material shortages, and uncertainty arising from existing conditions. These require comprehensive risk assessment, contingency planning, and regular reassessment throughout the project.

### **7) Procurement and Stakeholder Management**

The analysis indicates that early engagement with suppliers, craftspeople, and stakeholders is critical in conservation. Timely access to specialized resources, transparent communication, and community participation support project continuity and reduce stakeholder conflict.

## **FINDINGS ON THE EXECUTION PHASE**

### **1) Direct and Manage Project Work**

Findings suggest that execution in conservation prioritizes preservation of historical and cultural value over speed and cost-efficiency. Project managers must coordinate specialists and ensure that interventions remain minimally invasive, reversible, and consistent with conservation objectives. A phased implementation approach supports incremental review and adjustment.

### **2) Scope Management**

The analysis indicates that scope in conservation execution must remain adaptable to new findings while preserving project discipline. Controlled change, supported by documentation, helps maintain alignment with conservation principles and regulatory requirements.

### **3) Perform Quality Assurance**

Findings suggest that quality assurance in conservation depends on regular specialist inspections, non-invasive testing, and continuous evaluation of material and technique compatibility. Tailored quality management systems help preserve consistency and authenticity.

#### **4) Acquire, Develop, and Manage Project Team**

The analysis indicates that conservation requires teams with specialized expertise in traditional materials, conservation ethics, and historic construction techniques. Inclusion of both technical experts and cultural historians supports a more comprehensive preservation process and strengthens team alignment with project values.

#### **5) Manage Communications**

Findings suggest that communication in conservation must address the needs of diverse stakeholders with varying levels of technical knowledge and emotional attachment to the site. Transparent communication, regular updates, and accessible explanations of technical matters support inclusivity and informed participation.

#### **6) Conduct Procurements**

The analysis indicates that procurement in conservation is constrained by limited availability of suitable materials and specialist services. Ethical and sustainable sourcing, local procurement where possible, and long-term relationships with specialist suppliers improve reliability and alignment with conservation objectives.

#### **7) Manage Stakeholder Engagement**

Findings suggest that stakeholder engagement in conservation must remain continuous throughout implementation. Trust, shared responsibility, and active consultation help manage expectations and maintain support among heritage authorities, communities, historians, and cultural organizations.

### **FINDINGS ON THE MONITORING AND CONTROL PHASE**

#### **1) Monitor and Control Project Work**

The analysis indicates that monitoring in conservation must assess not only progress against plan but also the effect of interventions on historical authenticity and physical condition. Regular inspections, photographic records, and detailed reporting are necessary to support informed control.

#### **2) Perform Integrated Change Control**

Findings suggest that change control in conservation requires stricter evaluation than in conventional construction. Proposed changes must be assessed against authenticity, reversibility, and cultural significance, ideally through review involving conservation experts and key stakeholders.

#### **3) Validate and Control Scope**

The analysis indicates that scope control in conservation is essential to prevent drift caused by unforeseen discoveries or expanding intervention demands. Regular consultation with specialists and authorities helps maintain alignment with preservation priorities.

#### **4) Control Schedule and Costs**

Findings suggest that schedule and cost control in conservation require flexibility due to regulatory delays, hidden defects, and scarcity of specialized inputs. Time buffers, contingency funding, regular cost review, and proactive procurement planning improve control.

#### **5) Control Quality**

The analysis indicates that quality control in conservation extends beyond technical compliance to the protection of historical and cultural value. Frequent audits and specialist review are necessary to confirm the compatibility of methods and materials with conservation principles.

#### **6) Control Communications and Stakeholder Engagement**

Findings suggest that communication control should ensure that all stakeholder groups remain adequately informed and engaged. Structured communication planning and regular meetings support expectation management and reduce misunderstanding.

#### **7) Control Risks and Procurements**

The analysis indicates that conservation risk and procurement control must address structural uncertainty, unexpected historical discoveries, and challenges in sourcing appropriate materials. Early supplier engagement, collaboration with traditional craftspeople, and regular contract review strengthen project control.

### **FINDINGS ON THE CLOSING PHASE**

#### **Close Project or Phase**

Findings suggest that closing a conservation project requires more than formal completion. It must confirm that the structure's historical and cultural significance has been preserved in accordance with conservation standards. This includes comprehensive

documentation of methods, materials, and interventions; stakeholder approval; and preparation of maintenance and monitoring plans to support long-term preservation.

**Close Procurements**

The analysis indicates that procurement closure in conservation is more demanding than in standard construction due to the specialized nature of materials and services. Verification of compliance, detailed source records, and documentation of techniques used are important for future maintenance and restoration. Long-term relationships with specialist suppliers and artisans also support continuity and authenticity in later interventions.

**PROPOSED FRAMEWORK FOR CONSERVATION PROJECT MANAGEMENT**

Based on the comparative analysis and phase-specific findings, this study proposes a tailored project management framework for architectural heritage conservation aligned with PMBOK process groups.

The framework is structured around the five project life cycle phases (initiation, planning, execution, monitoring and control, and closing) while incorporating conservation-specific priorities that differentiate it from conventional construction project management.

In the initiation phase, the framework emphasizes heritage-based project definition, including cultural value assessment, regulatory alignment, and early stakeholder integration. In contrast to construction projects, the project charter incorporates conservation principles such as authenticity, reversibility, and minimal intervention.

In the planning phase, the framework introduces adaptive planning mechanisms that account for uncertainty in existing structures, material constraints, and regulatory processes. Flexible scope definition, contingency-based scheduling, and specialized procurement strategies are central components.

In the execution phase, the framework prioritizes controlled and reversible interventions supported by continuous expert involvement. Implementation is structured in phases, allowing iterative validation of conservation outcomes and adjustment based on emerging findings.

In the monitoring and control phase, the framework integrates conservation-focused evaluation criteria, including the impact of interventions on historical integrity. Change control processes are more restrictive and require validation against conservation principles and stakeholder expectations.

In the closing phase, the framework extends beyond project completion to include documentation, stakeholder validation, and long-term maintenance planning. This ensures continuity of conservation efforts and supports future interventions.

Overall, the proposed framework adapts traditional project management principles to the specific requirements of heritage conservation by embedding flexibility, interdisciplinary collaboration, and value-based decision-making throughout the project life cycle.

The proposed framework is summarized in [Table 1](#), highlighting key differences between conventional construction project management and conservation-oriented adaptations across project life cycle phases [Table 1](#).

While the PMBOK framework provides a structured foundation for project management, its application to heritage conservation remains limited. Existing studies have noted that standardized project management models often assume predictability, clearly defined scope, and linear workflows, which contrast with the uncertainty and context-dependence of conservation projects. In this context, adaptive and agile project management approaches may offer complementary perspectives, particularly in addressing uncertainty and iterative decision-making in conservation projects. Alternative approaches, including adaptive management and iterative decision-making models, may offer greater flexibility in addressing unforeseen conditions and evolving stakeholder expectations. However, these approaches are less formalized and lack the structured guidance provided by PMBOK. The proposed framework therefore represents an attempt to bridge this gap by adapting conventional project management principles to the specific conditions of heritage conservation.

**Table 1**

<b>Table 1 Proposed Conservation Project Management Framework Based on Project Life Cycle Phases</b>		
<b>Project Phase</b>	<b>Conventional Construction Approach</b>	<b>Conservation-Oriented Adaptation (Proposed Framework)</b>
<b>Initiation</b>	Project charter defines scope, objectives, budget, and stakeholders with focus on efficiency and compliance	Project charter integrates cultural significance, authenticity, and conservation principles; expanded stakeholder identification including heritage authorities, communities, and cultural actors
<b>Planning</b>	Fixed scope, linear scheduling, cost optimization, standard procurement strategies	Flexible scope with contingencies; adaptive scheduling and budgeting; inclusion of structural assessment, historical research,

		and specialized procurement for traditional materials and expertise
<b>Execution</b>	Emphasis on speed, cost-efficiency, and standardized construction practices	Emphasis on minimally invasive and reversible interventions; phased implementation; continuous involvement of conservation experts and specialists
<b>Monitoring and Control</b>	Performance tracking focused on time, cost, and quality compliance	Monitoring includes assessment of impact on historical integrity; stricter change control aligned with conservation principles; enhanced documentation and stakeholder validation
<b>Closing</b>	Project completion, handover, and documentation for operational use	Extended closing including detailed conservation documentation, stakeholder approval, and long-term maintenance and monitoring planning

## CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates that project management approaches in heritage conservation differ fundamentally from those in new construction. While construction projects emphasize functionality, efficiency, and cost control, conservation projects require adaptive strategies that prioritize authenticity, cultural integrity, and minimal intervention. Across all project phases, these differing objectives necessitate context-sensitive management approaches.

In the initiation phase, findings indicate that conservation projects require charters grounded in historical significance, regulatory compliance, and sustainability considerations. Early stakeholder identification and engagement, including heritage authorities, local communities, and experts, are essential for establishing a shared understanding and long-term support.

In the planning phase, conservation projects require flexible and specialized management plans. These must incorporate detailed assessments, contingency mechanisms, and compliance with conservation standards. Uncertainty in existing conditions necessitates adaptable scope management, while schedule and cost planning must account for potential delays and specialized resource requirements. Multidisciplinary collaboration and structured communication are central to effective planning.

In the execution phase, conservation practices rely on controlled, minimally invasive, and reversible interventions. Continuous involvement of specialists ensures alignment with conservation principles. Adaptive scope management, rigorous quality assurance, and stakeholder-oriented communication support both technical accuracy and broader acceptance. Procurement processes must address the sourcing of specialized materials and expertise.

During monitoring and control, conservation projects require continuous evaluation of both project performance and the impact of interventions on heritage values. Change control must be strictly aligned with authenticity and reversibility principles. Flexible schedule and cost control mechanisms, combined with regular quality audits and stakeholder communication, are necessary to manage uncertainties effectively.

In the closing phase, conservation projects extend beyond formal completion to include comprehensive documentation, stakeholder validation, and long-term maintenance planning. Detailed records of interventions and material use support future conservation efforts, while sustained relationships with specialists and suppliers enhance continuity. Where appropriate, adaptive reuse can support long-term functionality without compromising heritage value.

Overall, the findings confirm that conservation projects require tailored project management approaches that respond to regulatory, material, technical, and cultural complexities. These challenges demand specialized expertise, interdisciplinary coordination, and flexible management strategies.

This study is based on a qualitative review of existing literature and does not include empirical validation of the proposed framework. The selection of sources, although guided by relevance and academic rigor, may introduce bias and does not represent a fully systematic review. Additionally, the framework is conceptual in nature and may require adaptation when applied to specific project contexts.

## RECOMMENDATIONS

Based on the findings, the following recommendations are proposed:

- Development of conservation-specific project management frameworks aligned with international conservation principles
- Integration of digital tools and documentation methods to improve planning, monitoring, and knowledge transfer
- Strengthening interdisciplinary collaboration among engineers, conservation specialists, and cultural stakeholders
- Adoption of adaptive management approaches that accommodate uncertainty in heritage contexts
- Further research on cost-benefit analysis, funding models, and regulatory frameworks in conservation projects
- Exploration of cross-cultural project management practices to enhance stakeholder collaboration in diverse contexts

Future research should focus on empirical validation of the proposed framework and the application of digital and interdisciplinary approaches to improve conservation project outcomes.

## ACKNOWLEDGMENTS

None.

## REFERENCES

- Abazid, M., and Harb, H. (2018). An Overview of Risk Management in Construction Projects. *Academic Research International*, 9(2), 73–79.
- Aktuna, M. E. (2024). *Taşınmaz Kültür Varlıklarının Korunmasında Sürdürülebilir Bütüncül Bir Yönetim Sisteminin Geliştirilmesi* (Doctoral dissertation, Ankara Hacı Bayram Veli Üniversitesi).
- Aktuna, M. E., and Eskici, B. (2024). Restoration Manager: Adapting Project Delivery Methods for the Restoration of Architectural Heritage. *Turkish Journal of Engineering*, 8(2), 265–281. <https://doi.org/10.31127/tuje.1386599>
- Almasifar, N., Canbolat, T. Ö., Akhavan, M., and González-Lezcano, R. A. (2021). Proposing a New Methodology for Monument Conservation “Scope Management” by the Use of an Analytic Hierarchy Process Project Management Institute System and the ICOMOS Burra Charter. *Sustainability*, 13(21), 11895. <https://doi.org/10.3390/su132313174>
- Apollo, M., Grzyl, B., and Pawel, J. (2018). The Influence of Historical Conditions on Time and Cost of Construction Projects. *MATEC Web of Conferences*, 222, 01003. <https://doi.org/10.3311/CCC2018-090>
- Atkin, B., and Skitmore, M. (2008). Stakeholder Management in Construction. *Construction Management and Economics*, 26(6), 549–552. <https://doi.org/10.1080/01446190802142405>
- Bhuiyan, S. H. (2015). *Implication of PMBOK in the Construction Industry* (Doctoral Dissertation, BRAC University).
- Burke, R. (2001). *Project Management: Planning and Control Techniques* (3rd ed.). Wiley.
- Clough, R. H., Sears, G. A., and Sears, S. K. (2000). *Construction Project Management* (4th ed.). Wiley.
- Frederiksen, L., Phelps, S. F., and Kimmons, R. (2018). *Introduction to Literature Reviews*. Rapid Academic writing.
- Hao, Q., Shen, W., Neelamkavil, J., and Thomas, R. (2008, July). Change Management in Construction Projects. In *Proceedings of the International Conference on Information Technology in Construction CIB W78* (15–17).
- Helgason, V. (2010). *Project Scope Management* (Doctoral Dissertation, Reykjavik University).
- Hendrickson, C. T., and Au, T. (1989). *Project Management for Construction: Fundamental Concepts for Owners, Engineers, Architects, and Builders*. Prentice Hall.
- Heras, V., Wijffels, A., Cardoso, F., Vandesande, A., Santana, M., Van Orshoven, J., Steenberghen, T., and Van Balen, K. (2013). A Value-Based Monitoring System to Support Heritage Conservation Planning. *Journal of Cultural Heritage Management and Sustainable Development*, 3(2), 130–147. <https://doi.org/10.1108/JCHMSD-10-2012-0051>
- Hribar, J. P., and Asbury, G. E. (1985). Elements of Cost and Schedule Management. *Journal of Management in Engineering*, 1(3), 138–148. [https://doi.org/10.1061/\(ASCE\)9742-597X\(1985\)1:3\(138\)](https://doi.org/10.1061/(ASCE)9742-597X(1985)1:3(138))
- ICOMOS. (2003). *Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage*.
- Jigyasu, R. (2005). Towards Developing Methodology for Integrated Risk Management of Cultural Heritage Sites and Their Settings. *International Journal of Disaster Risk Science*, 6(1), 7–18.
- Keeves, J. P. (2001). Comparative Research in Education: IEA Studies. In *International encyclopedia of the social and behavioral sciences* (2421–2427). Elsevier. <https://doi.org/10.1016/B0-08-043076-7/02350-0>
- Khalil, A., Hammouda, N., and El-Deeb, K. (2018). Implementing Sustainability in Retrofitting Heritage Buildings: Case Study, Villa Antoniadis, Alexandria, Egypt. *Heritage*, 1(1), 57–87. <https://doi.org/10.3390/heritage1010006>
- Khan, A. (2006). Project Scope Management. *Cost Engineering*, 48(6), 12–16.
- Kubontubuh, C. P., and Martokusumo, W. (2019). Meeting the Past in the Present: Authenticity and Cultural Values in Heritage Conservation at the Fourteenth-Century Majapahit Heritage Site in Trowulan, Indonesia. *International Journal of Heritage Studies*, 26(5), 469–479. <https://doi.org/10.1080/13527258.2019.1652923>
- Kutsevych, V., and Tyshkevych, O. (2022). Modern Direction of General Secondary Education Formation. *Містобудування та територіальне планування*. <https://doi.org/10.32347/2076-815X.2022.80.248-260>
- Lester, A. (2006). *Project Management, Planning and Control: Managing Engineering, Construction, and Manufacturing Projects to PMI, APM, and BSI Standards* (5th ed.). Elsevier.
- Liang, W., Ahmad, Y., and Mohidin, H. H. B. (2023). The Development of the Concept of Architectural Heritage Conservation and its Inspiration. *Built Heritage*, 7(21). <https://doi.org/10.1186/s43238-023-00103-2>
- Low, C. A. (2012). *Human Resource Management in a Project Team* (Doctoral Dissertation, Universiti Tunku Abdul Rahman).
- Majewski, T., and Altschul, J. H. (2018). *Heritage Management*. In *The Encyclopedia of Archaeological Sciences*. Wiley. <https://doi.org/10.1002/9781119188230.saseas0296>
- Martinelli, R. J., and Milosevic, D. Z. (2015). *Project Management Toolbox*. Wiley. <https://doi.org/10.1002/9781119174820>

- Mhetre, K. V., Konnur, B. A., and Landage, A. B. (2021). Risk Management in the Construction Industry. In *Lecture notes in civil engineering* (Vol. 111,657–664). Springer.
- Mohamed, M., Dewidar, K., Elattar, S., and Khodeir, L. (2021). Identifying the Role of Project Management in Sustainable Refurbishment of Heritage Buildings. *Journal of Urban Research*, 41(1), 79–101. <https://doi.org/10.21608/jur.2021.55501.1045>
- Nwachukwu, C. V., Udejaja, C., Chileshe, N., and Okere, C. E. (2017). The Critical Success Factors for Stakeholder Management in the Restoration of Built Heritage Assets in the UK. *International Journal of Building Pathology and Adaptation*, 35(4), 304–331. <https://doi.org/10.1108/IJBPA-07-2017-0030>
- O'Brien, J. J. (2013). *Construction Inspection Handbook: Quality Assurance/Quality Control* (4th ed.). Springer.
- Oberlender, G. D. (2000). *Project Management for Engineering and Construction* (2nd ed.). McGraw-Hill.
- Olanrewaju, O. I., Bello, A. O., Semiu, M. A., and Mudashiru, S. A. (2024). Critical Barriers to Effective Communication in the Construction Industry: Evidence from Nigeria. *International Journal of Construction Management*, 1–19. <https://doi.org/10.1080/15623599.2024.2362018>
- Petzet, M. (2004). Principles of Preservation: An Introduction to the International Charters for Conservation and Restoration 40 Years After the Venice Charter. In *International charters for conservation and restoration* (Vol. 1, 7–29). ICOMOS.
- Project Management Institute. (2017). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. Project Management Institute.
- Ragin, C. C. (2008). What is Qualitative Comparative Analysis?
- Rebec, K. M., Deanovič, B., and Oostwegel, L. (2022). Old Buildings Need New Ideas: Holistic Integration of Conservation-Restoration Process Data Using Heritage Building Information Modelling. *Journal of Cultural Heritage*, 55, 30–42. <https://doi.org/10.1016/j.culher.2022.02.005>
- Reyers, J., and Mansfield, J. (2001). The Assessment of Risk in Conservation Refurbishment Projects. *Structural Survey*, 19, 238–244. <https://doi.org/10.1108/02630800110412480>
- Rotich, J. C., Keitany, P., and Sang, H. W. (2021). Code of Conduct and Procurement Management in Selected Public Secondary Schools: Evidence in Kenya. <https://doi.org/10.37284/eajbe.3.1.298>
- Roy, D., and Kalidindi, S. (2017). Critical Challenges in Management of Heritage Conservation Projects in India. *Journal of Cultural Heritage Management and Sustainable Development*, 7(3), 290–307. <https://doi.org/10.1108/JCHMSD-03-2017-0012>
- Rumane, A. R. (2017). *Quality Management in Construction Projects*. CRC Press. <https://doi.org/10.1201/9781315098425>
- Rushton, T. (2022). Modern Methods of Construction. *Journal of Building Survey, Appraisal and Valuation*, 10(4). <https://doi.org/10.69554/BWYR2011>
- Sayigh, A. (2019). *Sustainable Vernacular Architecture: How the Past can Enrich the Future*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-06185-2>
- Sena-Mawuli, P. S. (2021). *Assessment of Project Closing Procedures at Ghana Ports and Harbours Authority-Tema* (Doctoral dissertation, Kwame Nkrumah University of Science and Technology).
- Smith, J. (2005). Cost Budgeting in Conservation Management Plans for Heritage Buildings. *Structural Survey*, 23(2), 101–110. <https://doi.org/10.1108/02630800510593675>
- Spiridon, P., and Sandu, I. (2015). Conservation of Cultural Heritage: From participation to Collaboration. *ENCATC Journal of Cultural Management and Policy*, 5(1), 43–52. <https://doi.org/10.3389/ejcmp.2023.v5iss1-article-4>
- Taleb, H. A., Ismail, S., Wahab, M. H., Mardiah, W. N., Rani, W. N., and Amat, R. C. (2017). An Overview of Project Communication Management in Construction Industry Projects. <https://doi.org/10.31039/jomeino.2017.1.1.1>
- Taylor, J. (2008). *Project Scheduling and Cost Control: Planning, Monitoring and Controlling the Baseline*. J. Ross Publishing.
- Toniolo, L., Boriani, M., and Guidi, G. (2014). *Built Heritage: Monitoring Conservation management*. Springer. <https://doi.org/10.1007/978-3-319-08533-3>
- UNESCO. (2005). *Faro Convention Framework Convention on the Value of Cultural Heritage for Society*.
- Van Roy, N., Verstrynge, E., and Van Balen, K. (2015). Quality Management of Interventions on Historic Buildings. In *Structural Studies, Repairs, and Maintenance of Heritage Architecture* (313–324). <https://doi.org/10.2495/STR150261>
- Vandesande, A., Van Balen, K., Della Torre, S., and Cardoso, F. (2018). Preventive and Planned Conservation as a New Management Approach for Built Heritage: From a Physical Health Check to Empowering Communities and Activating (Lost) Traditions for local sustainable development. *Journal of Cultural Heritage Management and Sustainable Development*, 8(2), 78–81. <https://doi.org/10.1108/JCHMSD-05-2018-076>
- Wells, J. C., and Lixinski, L. (2016). Heritage Values and Legal Rules: Identification and Treatment of the Historic Environment Via an Adaptive Regulatory Framework (Part 1). *Journal of Cultural Heritage Management and Sustainable Development*, 6(3), 345–364. <https://doi.org/10.1108/JCHMSD-11-2015-0045>
- Yang, J., Shen, Q., and Ho, M. (2009). An Overview of Previous Studies in Stakeholder Management and its Implications for the Construction Industry. *Journal of Facilities Management*, 7(2), 159–175. <https://doi.org/10.1108/14725960910952532>