

Final Project 1

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Project Template

Faculty of Management
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Project Management Using Blockchain Technology

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1. Chapter 1: Introduction

1.1. Research Background

Project management is a fundamental discipline...

Project management is a fundamental discipline in modern organizations, requiring careful coordination among multiple stakeholders, including project teams, departments, suppliers, and external partners. Managing this complexity presents significant challenges, particularly in terms of transparency, data security, and operational efficiency. Furthermore, monitoring progress and ensuring projects adhere to planned schedules and budgets can be difficult. The motivation for this research arises from the increasing demand for innovative solutions that improve project management effectiveness and enhance overall performance, helping organizations achieve strategic goals while minimizing risks.¹

Blockchain Overview

Blockchain technology is an innovative digital system...

Blockchain technology is an innovative digital system that provides a decentralized and permanent ledger for recording transactions in a transparent and secure manner. Its key advantage lies in enabling reliable recordkeeping that cannot be easily altered, offering organizations a higher level of trust and accountability. Within project management, blockchain can enhance task tracking, ensure the automatic execution of smart contracts, and facilitate communication between all stakeholders. These features reduce dependency on intermediaries and accelerate decision-making processes, making blockchain a valuable tool for modern project environments.²

Blockchain in Project Management

Research shows that applying blockchain in project management...

Research shows that applying blockchain in project management can improve operational efficiency and reduce costs by automating processes and enabling seamless information sharing. For instance, managers can gain real-time insights into project progress, monitor resource allocation more effectively, and make decisions quickly based on accurate, transparent data. Additionally, smart contracts built on blockchain have been shown to reduce disputes among

¹ Osei-Kyei, R., & Chan, A. P. C. (2018). *Implementing project management practices in developing countries: Critical success factors and challenges*. *International Journal of Project Management*, 36(7), 917–929.
<https://doi.org/10.1016/j.ijproman.2018.05.002>

² Habib, G. (2022). *Blockchain Technology: Benefits, Challenges, Applications, and Future Directions*. *Future Internet*, 14(11), 341. MDPI.
<https://doi.org/10.3390/fi14110341>

stakeholders and ensure compliance with agreed terms without continuous manual oversight, which can enhance trust and reliability across project teams.³

Challenges of Blockchain Implementation

Despite these benefits, there are notable challenges...

Despite these benefits, there are notable challenges in adopting blockchain within project management. High implementation costs, the need to train personnel, and regulatory complexities surrounding digital contracts and data protection remain significant barriers. Moreover, integrating blockchain successfully often requires cultural and organizational adjustments, as stakeholders must adapt to new workflows and trust digital systems. Overcoming these hurdles is critical to achieving the full potential of blockchain in projects, and organizations need strategic planning to ensure smooth adoption.⁴

Research Aim

This study aims to investigate how blockchain can be effectively applied...

This study aims to investigate how blockchain can be effectively applied in project management, highlighting its benefits, identifying potential challenges, and offering practical recommendations for organizations. By examining both theoretical perspectives and real-world examples, this research seeks to provide a comprehensive framework that supports informed decision-making and promotes efficiency, transparency, and accountability in project execution.⁵

1.2 Research Problem

Project management in contemporary organizations continues to face significant challenges, especially under traditional methodologies. Key difficulties include limited transparency, insufficient mechanisms for accurately tracking project progress, complex management of contracts and resources, and significant risks related to security, data integrity, and overall trustworthiness. As projects become increasingly complex and involve multiple stakeholders across different regions and sectors, these challenges are further magnified, often resulting in

³ Sönmez, R., Dikmen, I., & Birgonul, M. T. (2021). *Blockchain in project management: A systematic review of use cases and a design decision framework*. *Journal of Engineering, Design and Technology*, 19(5), 1189–1207. <https://doi.org/10.1108/JEDT-03-2021-0164>

⁴ Amoah, C., & Oh, J. (2021). *Blockchain adoption in project management*. *Issues in Information Systems*, 22(1), 152–167. https://iacis.org/iis/2021/4_iis_2021_152-167.pdf

⁵ Jadidoleslami, S., & Azizi, M. (2022). *Blockchain for project and construction management: A systematic and scoping literature review*. *Journal of Information Technology Management*, 14(2), 78–98. https://jitm.ut.ac.ir/article_87844.html.

delays, increased costs, inefficiencies, and decreased accountability⁶ Traditional project management frameworks, such as PMBOK, PRINCE2, or Agile, while effective in many contexts, often struggle to fully address the needs of highly dynamic, multi-stakeholder projects, highlighting the necessity for innovative technological solutions.

Blockchain technology has emerged as a promising tool to address many of these challenges. Its decentralized, immutable, and secure ledger system ensures that project data can be shared reliably among all stakeholders, minimizing disputes and enhancing overall transparency. Features such as smart contracts automate routine processes, facilitate secure data exchange, and enable real-time monitoring of project activities, potentially reducing delays, improving workflow efficiency, and enhancing accountability across the project lifecycle Despite its potential, the adoption of blockchain in project management remains limited due to gaps in both theoretical understanding and practical implementation.⁷

1.2.1 Theoretical Gaps

A major theoretical gap is the limited academic research connecting blockchain technology directly with established project management practices. While blockchain has been extensively studied in fields such as supply chain management, finance, and IT infrastructure, relatively few studies explore how it can be systematically integrated into project management frameworks to support the full project lifecycle, from initiation to closure⁸ Another gap is the absence of a comprehensive theoretical model that combines blockchain features, such as smart contracts and data immutability, with project planning, resource allocation, risk management, and reporting processes. Current literature often examines these features in isolation, which limits the understanding of their potential holistic impact on project efficiency⁹. Additionally, there is insufficient critical analysis of challenges that organizations may face during blockchain adoption. These challenges include organizational disruption, shifts in team dynamics, the need for new management processes, and the potential resistance to technological change¹⁰.

⁶ (Hariyani, 2025; Tasnim, 2023).

⁷ (Hariyani, 2025)

⁸ (Sonmez et al., 2021).

⁹ (Hariyani, 2025).

¹⁰ (Tasnim, 2023).

1.2.2 Practical Gaps

In practice, few empirical studies investigate the implementation of blockchain in live projects across private, public, or governmental sectors, limiting insights into its actual impact on project efficiency, cost reduction, and stakeholder satisfaction¹¹. Organizations face significant technical and operational challenges when integrating blockchain into existing project management systems, including developing the required infrastructure, training personnel, and ensuring compliance with legal and regulatory standards¹². Moreover, there is a lack of documented cases demonstrating blockchain adoption in the Arab region and Saudi Arabia specifically, which creates a contextual gap in understanding how the technology can be adapted to local organizational structures, cultural norms, regulatory environments, and sector-specific needs¹³.

Conclusion / Research Aim

Addressing both theoretical and practical gaps is essential to enable organizations to leverage blockchain effectively, improve transparency, enhance operational efficiency, and ensure accountability throughout project lifecycles. This research aims to develop a comprehensive theoretical framework that integrates blockchain with established project management methodologies while empirically evaluating its practical implementation in real-world projects. By doing so, the study will provide actionable insights for organizations seeking to adopt blockchain, both globally and within local contexts.

Research Question

How can blockchain technology be effectively integrated into project management practices to address theoretical and practical gaps, improve transparency, enhance efficiency, and adapt to both global and local organizational contexts?

1.1. Research Significance

This study is highly significant both theoretically and practically, given the urgent need to improve project management approaches and enhance efficiency in addressing challenges of traditional project methods. Such challenges include

¹¹ (Song et al., 2023)

¹² (Hariyani, 2025)

¹³(Jadidoleslami, 2022)

limited transparency, difficulties in monitoring project progress, complexities in contract and resource management, and risks related to security and credibility. This research explores blockchain technology as an innovative tool to address these challenges, contributing to multiple scientific and practical objectives.¹⁴

1.1.1. At the theoretical level

Advancing Academic Knowledge

This study helps fill gaps in academic literature regarding blockchain applications in project management. Most current studies focus on technical or financial applications, with few linking blockchain to core project management principles. This research broadens theoretical understanding and demonstrates how emerging technologies can integrate with traditional project management frameworks.¹⁵

Establishing a Comprehensive Theoretical Framework

The study proposes a theoretical framework connecting traditional project management practices with blockchain capabilities. This framework provides a foundation for future research and enhances understanding of blockchain's influence on organizational structures and decision-making in project environments.¹⁶

Critical Analysis of Theoretical Challenges

The research examines potential challenges of blockchain implementation, including its impact on team dynamics, changes required in decision-making processes, and limitations when integrating with conventional project management tools. This analysis strengthens academic depth and reliability of findings.¹⁷

¹⁴ Sönmez, R., Özdemir Sönmez, F., & Ahmadiheykhsarmast, S. (2021). Blockchain in project management: a systematic review of use cases and a design decision framework. *Journal of Ambient Intelligence and Humanized Computing*. Link

¹⁵ Jadidoleslami, S. (2022). Blockchain for Project and Construction Management. *Journal of Information Technology Management* Link

¹⁶ Spychiger, F. (2023). Organizing projects with blockchain through a decentralized approach. *ScienceDirect*. Link Al Ali, F., Shehhi, F. A., Shamayleh, A., & Abuhlimeh, D. (2023). The application of blockchain technology in project management. *Proceedings of International Structural Engineering and Construction*. Link

¹⁷ Alkhudary, R. (2024). Utilizing blockchain to enhance project management information systems. *International Journal of Managing Projects in Business*. Link

Hariyani, D. (2025). A literature review on transformative impacts of blockchain in project management. *ScienceDirect*. Link

1.1.2. At the practical level

Improving Project Management Efficiency

Blockchain can enhance transparency, streamline monitoring, and automate contract management. These improvements reduce errors, accelerate decision-making, and lower operational costs related to intermediaries.¹⁸

Supporting Decision-Making and Risk Management

The study helps managers understand blockchain applications, assess potential risks, and identify anticipated benefits, enabling informed decisions on technology adoption.¹⁹

Application in Local and Regional Contexts

Given limited studies in the Arab region and Saudi Arabia, this research provides a model applicable to local projects, promoting adoption of innovative technologies and improving regional project management practices.²⁰

Enhancing Human Resource Competencies

The study identifies training and skill requirements for teams implementing blockchain, including smart contract management, data analysis, and understanding modern organizational processes, fostering professional competence and innovation.²¹

1.2. Research Questions

¹⁸IBM. (2025). Using blockchain as a project management device. *IBM Think*. Link
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¹⁹ Amoah, E. (2021). Blockchain adoption in project management. *International Information Systems Conference*. Link
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²⁰ Hariyani, D. (2025). A literature review on transformative impacts of blockchain in project management. *ScienceDirect*. Link

²¹ 101 Blockchains. (2023). The Growing Role of Blockchain in Project Management. Link

Alkhudary, R. (2024). Utilizing blockchain to enhance project management information systems. *International Journal of Managing Projects in Business*. Link

1.3. Research Objectives

1.4. Research Hypotheses

1.5. Research Model

1.6. Research Methodology

1.7. Scope of The Study

1.8. The Suggested Project Structure

2.Chapter 2: Literature Review

2.1. Introduction

Brief introduction for the chapter

2.2. The independent variable

2.3. The dependent variable

2.4. The relationship between the independent and the dependent variables

2.5. Conclusion

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6. (Hariyani, 2025; Tasnim, 2023).
7. (Hariyani, 2025)
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9. (Hariyani, 2025).
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11. (Song et al., 2023)
12. (Hariyani, 2025)
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