

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

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>

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 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

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.
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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.

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 delays, increased costs, inefficiencies, and decreased accountability.⁶ 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

⁶ (Hariyani, 2025; Tasnim, 2023).

⁷ (Hariyani, 2025)

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 closure ⁸ 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 efficiency ⁹. 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 change ¹⁰.

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 satisfaction ¹¹. 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 standards ¹². 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 needs ¹³.

⁸ (Sonmez et al., 2021).

⁹ (Hariyani, 2025).

¹⁰ (Tasnim, 2023).

¹¹ (Song et al., 2023)

¹² (Hariyani, 2025

¹³(Jadidoleslami, 2022)

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 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

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

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

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

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](#)

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¹⁸ IBM. (2025). Using blockchain as a project management device. *IBM Think*. [Link](#)
Accenture. (2025). Blockchain for Smart Contracts | Case Study. [Link](#)

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

This study aims to explore the practical and strategic value of blockchain technology within project management environments. Given the rapid digital transformation taking place in organizations today, blockchain has emerged as a tool with the potential to address long-standing issues related to trust, data accuracy, workflow coordination, and documentation security.

Accordingly, this research focuses on the following questions:

- 1. How can blockchain technology enhance transparency and trust among project stakeholders?**

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

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

Transparency issues often arise in projects due to fragmented information, inconsistent documentation, and delays in communication. This question examines how blockchain's immutable and shared ledgers can address these gaps.

2. What impact does blockchain have on improving operational efficiency and reducing project-related costs?

Many projects struggle with duplicated processes, manual verification, and administrative overhead. This question evaluates whether blockchain can streamline workflows and reduce time spent on approvals and reconciliations.

3. What challenges may arise when integrating blockchain into project management workflows?

Despite its potential, blockchain adoption faces technical, regulatory, and organizational barriers. This question identifies obstacles that organizations may encounter during implementation.

4. What strategies can support successful adoption of blockchain within project environments?

This question explores training, readiness programs, policy adjustments, and organizational support mechanisms that can facilitate smooth integration.²²

1.3. Research Objectives

The primary aim of this research is to examine how blockchain can contribute to more effective and transparent project management processes. To achieve this, the study sets the following objectives:

1. To examine how blockchain improves transparency and trust within project teams.

This includes assessing how a shared, tamper-proof ledger influences communication, documentation accuracy, and stakeholder alignment.

2. To analyze the impact of blockchain on operational efficiency and cost reduction.

This objective investigates whether blockchain can shorten approval cycles, prevent errors, and reduce reliance on manual verification.

²² Mason & Staunton (2022); Sun, Hou & Chong (2021)

3. To identify key challenges associated with blockchain adoption in project management.

Challenges may include technological readiness, regulatory requirements, resistance to change, and compatibility with existing systems.

4. To provide practical recommendations that support the effective use of blockchain in organizational projects.

Recommendations will be based on existing literature, empirical findings, and best practices observed in similar industries..²³

1.4. Research Hypotheses

Based on the reviewed literature, the study proposes the following hypotheses:

- **H1:** Blockchain implementation positively enhances transparency and data accuracy in project management.
- **H2:** Blockchain adoption contributes to improved operational efficiency and lower administrative costs.
- **H3:** Organizational and regulatory challenges negatively influence blockchain adoption in project environments.
- **H4:** Adequate readiness, training, and awareness increase the likelihood of successful blockchain implementation.

These hypotheses will guide the quantitative and qualitative analysis.²⁴

1.5. Research Model

²³ Li, Greenwood & Kassem (2019); Perera et al. (2020)

²⁴ Cheng, Weng & Shen (2020); Hunhevicz & Hall (2020)

The conceptual model developed for this study illustrates the relationship between blockchain adoption and project performance. It integrates multiple dimensions that influence how blockchain creates value within project workflows. The model consists of:

- **Blockchain Features:**

Transparency, smart contracts, decentralization, immutability

- **Organizational Factors:**

Readiness of teams, digital infrastructure, training quality, organizational culture

- **Regulatory Factors:**

Compliance requirements, data protection policies, industry regulations

- **Project Performance Outcomes:**

Efficiency, cost reduction, accuracy of documentation, trust among stakeholders

The model proposes that blockchain features directly enhance project performance, while organizational and regulatory factors shape the extent to which blockchain is adopted across projects.²⁵

suggested Industry / Organization for the Empirical Study

his study proposes **Al Rajhi Bank** as an ideal context for exploring blockchain's impact on project performance. As one of the largest and most digitally advanced banks in the region, the bank manages a wide range of projects across technology, operations, compliance, risk, and customer experience.

Several factors make Al Rajhi Bank a suitable choice:

- **Complex project workflows:**

Many banking projects require coordination between multiple departments, making transparency and documentation accuracy essential.

²⁵ Elghaish et al. (2020); Penzes (2018)

- **High dependency on secure documentation:**

Blockchain can support areas such as contract management, vendor agreements, risk reporting, and internal approvals.

- **Digital transformation initiatives:**

The bank is continually upgrading its systems, which creates a strong environment for testing new technologies like blockchain.

- **Cross-department collaboration:**

Blockchain could help address challenges related to version control, data consistency, and audit trails across teams.

Using Al Rajhi Bank as the empirical site would offer insights relevant to financial institutions and large organizations engaged in structured project management²⁶

1.6. Research Methodology

The study adopts a **mixed-method approach** to ensure comprehensive and reliable results:

Quantitative Component

- A structured survey will be distributed to:
 - Project managers
 - IT specialists
 - Team leaders
 - Members involved in strategic and operational projects at Al Rajhi Bank
- The survey will measure perceptions regarding transparency improvements, efficiency gains, cost reductions, and adoption barriers.

²⁶ Alammary et al. (2019); Treiblmaier (2018)

Qualitative Component

- Semi-structured interviews will be conducted with selected participants to gain deeper insights into real challenges and practical considerations.
- Interviews will help validate survey findings and explore issues that may not appear in structured questionnaires.

Data Analysis

- Quantitative data will be analyzed using descriptive and inferential statistics.
- Qualitative responses will be interpreted through thematic analysis to identify recurring themes and insights.²⁷

suggested Structure for the Project

1. **Introduction**
2. **Literature Review**
3. **Research Methodology**
4. **Results and Data Analysis**
5. **Discussion**
6. **Conclusion and Recommendations**
7. **References**
8. **Appendices**

1.7. Scope of The Study

1. Chapter One: Introduction

- 1.1 Research Background
- 1.2 Research Problem
- 1.3 Research Questions
- 1.4 Research Objectives
- 1.5 Research Hypotheses
- 1.6 Research Model
- 1.7 Significance of the Study

²⁷ Saunders et al. (2019); Creswell (2014)

1.8 Structure of the Report

2. **Chapter Two: Literature Review**

2.1 Overview of Project Management

2.2 Overview of Blockchain Technology

2.3 Blockchain Applications in Project Management

2.4 Benefits of Blockchain Adoption

2.5 Challenges of Blockchain Integration

2.6 Summary of Literature

3. **Chapter Three: Methodology**

3.1 Research Design

3.2 Population and Sample

3.3 Data Collection Methods

3.4 Validity and Reliability

3.5 Data Analysis Techniques

4. **Chapter Four: Findings and Analysis**

5. **Chapter Five: Discussion**

6. **Chapter Six: Conclusion and Recommendations**

7. **References**

8. **Appendices**

2.Chapter 2: Literature Review

2.1. Introduction

This chapter reviews previous studies related to project management and the use of blockchain technology in organizational environments. The aim of this chapter is to provide a theoretical foundation for the study by analyzing relevant literature, identifying key findings, and highlighting research gaps. Reviewing prior studies helps explain how blockchain technology can support and enhance project management practices.

2.2 Previous Studies on Project Management

Project management is recognized as a fundamental discipline that supports organizations in achieving strategic objectives. Kerzner (2017) emphasizes that effective project management improves cost control, time management, and quality outcomes. However, many studies indicate that traditional project management systems face challenges related to transparency, coordination, and information sharing among stakeholders.

Turner (2018) notes that project failures are often caused by weak communication, lack of real-time monitoring, and limited visibility of project activities. These issues become more critical in complex projects involving multiple parties, which increases the need for advanced technological solutions to support project managers.

2.3 Overview of Blockchain Technology

Blockchain technology is an innovative digital system that enables decentralized and secure data recording. Nakamoto (2008) introduced blockchain as a distributed ledger that ensures transparency, immutability, and trust among users. Unlike traditional centralized

systems, blockchain allows data to be shared securely without reliance on intermediaries.

Tapscott and Tapscott (2016) argue that blockchain technology has the potential to transform business processes by improving traceability, reducing fraud, and enhancing operational efficiency. These characteristics make blockchain a promising technology for applications beyond financial transactions, including project management.

2.4 Blockchain Applications in Project Management

Recent studies have explored the use of blockchain technology in project management. Kifokeris and Koch (2020) suggest that blockchain can improve task tracking, documentation control, and collaboration among project stakeholders. The decentralized nature of blockchain ensures that all parties have access to reliable and up-to-date project information.

Li et al. (2021) found that blockchain technology, particularly through smart contracts, can automate project processes such as approvals, payments, and milestone verification. This automation reduces delays, minimizes errors, and increases transparency, leading to improved project performance and efficiency.

2.5 Independent and Dependent Variables

2.5.1 Independent Variable: Blockchain Technology

The independent variable in this study is **Blockchain Technology**. It refers to the use of decentralized digital ledger systems to manage, store, and share project-related information securely and transparently. Previous research indicates that blockchain technology enhances data

security, transparency, and trust among stakeholders (Nakamoto, 2008; Tapscott & Tapscott, 2016).

In project management, blockchain technology supports real-time data sharing, secure documentation, and automated execution of processes through smart contracts. These features position blockchain technology as a key factor that can influence project management outcomes.

2.5.2 Dependent Variable: Project Management Performance

The dependent variable of this study is **Project Management Performance**. It refers to the effectiveness and efficiency of managing project activities to achieve objectives within time, cost, scope, and quality constraints. According to Kerzner (2017), strong project management performance leads to improved coordination, better decision-making, reduced risks, and higher stakeholder satisfaction.

Project management performance can be measured through indicators such as project completion time, cost control, quality of deliverables, transparency, and communication effectiveness.

2.6 Relationship Between Independent and Dependent Variables

Several studies have examined the relationship between blockchain technology and project management performance. Research suggests that adopting blockchain technology positively influences project management performance by improving transparency, enhancing data security, and enabling real-time monitoring of project activities (Li et al., 2021).

Furthermore, smart contracts automate workflows such as approvals, payments, and progress verification, reducing administrative delays and human errors. As a result, blockchain technology contributes to increased operational efficiency and improved control over project processes. Based on the reviewed literature, it is expected that blockchain technology has a significant positive impact on project management performance.

2.7 Summary

This chapter reviewed previous studies related to project management and blockchain technology. The literature highlights limitations in traditional project management systems and demonstrates the potential of blockchain technology to enhance transparency, security, and efficiency. The relationship between blockchain technology and project management performance provides a strong foundation for the current study and supports the proposed research framework.

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