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Integrated Project Management: The Role of Communication, Risk, Quality, and Procurement in Project Success at PT Teknologi Gotong Royong

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ABSTRACT

This study aims to analyze the role of integrated project communication management, risk management, quality management, and procurement management in enhancing project success at PT Teknologi Gotong Royong. The research employs a descriptive design with a quantitative approach, using purposive sampling of 25 respondents directly involved in property digitalization projects, complemented by interviews, observations, and documentation. Data were analyzed using multiple linear regression with the assistance of statistical software. The findings show that all variables—communication management, risk management, quality management, and procurement management-have a significant influence on project success, with a coefficient of determination (R^2) of 0.791. Communication management has the strongest influence, followed by quality management, risk management, and procurement management. These results indicate that project success is strongly determined by the synergy among integrated project management aspects; therefore, the company must strengthen cross-division coordination, enhance risk mitigation, maintain consistent quality, and ensure effective procurement processes to support optimal project outcomes.

Keywords: *Communication Management; Risk Management; Quality Management; Procurement Management; Project Success.*

1. INTRODUCTION

In an era of increasingly fierce and dynamic business competition, project success is a determining factor in a company's competitiveness and sustainability. Project success is measured not only by achieving time, cost, and quality targets, but also by the organization's ability to manage various managerial aspects in an integrated manner (Buzzetto et al., 2020). Modern project management demands effective coordination between various organizational elements, with communication, risk management, quality control, and procurement and contracting systems playing interrelated roles (Elyashevich et al., 2024). Inefficiencies in any one of these aspects

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often directly impact overall project performance. Therefore, the integration of these four components is key to achieving optimal project outcomes (Zeng et al., 2022).

Project communication management plays a crucial role in ensuring clear and timely information is communicated to all stakeholders. Furthermore, risk management helps organizations identify potential obstacles and develop appropriate mitigation strategies. Quality management, through the application of Total Quality Management (TQM) principles, ISO standards, and the Six Sigma approach, ensures that each project stage meets established quality standards (Miozza et al., 2024) (ISO, 2015). Meanwhile, effective procurement and contract management contributes to cost efficiency, timeliness, and reliability among partners or vendors. The integration of these four aspects forms a comprehensive and mutually supportive project management system for overall project success.

PT Teknologi Gotong Royong is a property and technology investment company that manages various national-scale projects. The complexity of the company's projects requires the implementation of structured and integrated project management (Cantoni et al., 2024). In practice, project success at PT Gotong Royong is heavily influenced by the extent to which inter-team communication is effective, project risks are properly identified, work quality is maintained, and the procurement process is professionally executed. Based on this, this study was conducted to analyze how the integration of communication, risk, quality, and procurement management plays a role in enhancing project success at PT Teknologi Gotong Royong.

2. LITERATURE REVIEW

Project management is a field of study that focuses on how an organization effectively manages various resources to achieve project objectives within predetermined time, cost, and quality constraints. PMI (2020) defines project management as the application of knowledge, skills, tools, and techniques to various project activities to meet project needs and requirements. The scope of project management extends beyond the completion of technical activities to how the project's strategic value benefits the organization (Harju et al., 2024). Project success is determined by several critical factors, such as clarity of objectives, top management commitment, project team capabilities, quality of communication, effective risk management, and transparent procurement mechanisms (Ramírez-García et al., 2024; Faturohman et al., 2024). These internal and external factors interact, requiring a comprehensive and integrated approach.

In project communication management, the communication process encompasses three main stages: communication planning, communication management, and communication monitoring (Bleda & Krupnik, 2024). Communication planning includes identifying information needs, determining effective communication channels, and determining the frequency of information exchange between stakeholders. Communication management ensures that all relevant information is delivered accurately and timely, whether through coordination meetings, periodic reports, briefings, or digital communication technologies. Communication monitoring is necessary to ensure that received information is understood correctly and supports project activities. Technological support such as Microsoft Project, Trello, Slack, and ERP systems has been shown to increase

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communication effectiveness and enable real-time progress monitoring (Russell et al., 2022; Fahmi & Ali, 2022). Good communication has been shown to have a direct impact on team coordination, decision-making, and conflict prevention during project implementation.

Project risk management is a critical component aimed at identifying, analyzing, and controlling risks that could potentially hinder the achievement of project objectives. Project risks can stem from internal factors such as design errors, material delays, limited human resource capacity, or external factors such as regulatory changes, market price fluctuations, or weather conditions (Vörösmarty et al., 2024). The risk management process includes risk identification, probability and impact analysis, and the development of mitigation strategies. Four commonly used risk mitigation approaches are avoid, mitigate, transfer, and accept (Novianti et al., 2023). All risks are then recorded in a risk register to ensure each risk is systematically monitored throughout project implementation. In the property and technology industries, risks such as IT system failures, changing client requirements, or vendor delays often pose major challenges, requiring companies to implement robust risk management systems to ensure projects meet targets.

Quality management is another aspect that contributes significantly to project success. The implementation of Total Quality Management (TQM) emphasizes the involvement of all organizational members in continuous quality improvement, focusing on customer satisfaction and process improvement (Rini et al., 2024). Meanwhile, ISO 9001 provides a process-based quality management system framework aimed at ensuring that products and services meet established standards (ISO, 2015). The Six Sigma approach is used to reduce process variation and statistically minimize error rates, thereby improving the quality of project outcomes (Suprin et al., 2019). Project quality can be measured through quality audits, inspection reports, and user evaluations of project outcomes. The combination of TQM, ISO 9001, and Six Sigma helps companies maintain high quality standards while improving operational efficiency.

Procurement and contract management encompasses the processes of planning goods and services requirements, vendor selection, negotiation, contract creation, and vendor performance evaluation (Elyashevich et al., 2024). An effective procurement process must consider quality, price, vendor reliability, and the suitability of the contract to project needs. The contractual relationship between the company and the vendor must be built on transparency, accountability, and a clear understanding of the roles and responsibilities of each party. Vendor performance evaluation can be conducted through field audits, periodic performance evaluations, and contract reviews to ensure that the vendor is performing according to established quality standards established quality standards. Good procurement not only ensures timely resource availability but also reduces the risk of failure caused by external parties.

The integration of the four aspects of project management, communication, risk, quality, and procurement is a concept emphasized in the PMBOK Guide as part of project integration management (Duncan, 2020). This integration enables all aspects to support each other in achieving project objectives, resulting in more consistent and informed decisions. Effective communication strengthens the risk management process and facilitates coordination with vendors, while quality

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management supports efficient procurement by establishing quality standards. Conversely, good risk management can prevent issues that impact procurement quality and schedules. Previous research has shown that cross-functional integration is a key determinant of modern project success (Noverdiansyah et al., 2022; Ibrahim et al., 2024). Therefore, the conceptual framework of this study positions these four aspects as independent variables assumed to have a direct and indirect influence on project success in the context of PT Teknologi Gotong Royong.

3. RESEARCH METHOD

This study employs a descriptive quantitative research methodology designed to empirically examine the influence of communication management, risk management, quality management, and procurement management on project success at PT Teknologi Gotong Royong. The descriptive approach provides a systematic overview of how each variable is implemented within the organization, while the quantitative design enables measurement of statistical relationships among variables through numerical data obtained from respondents. This methodological approach is suitable for identifying patterns, assessing variable interactions, and validating theoretical assumptions regarding integrated project management within technology-based enterprises.

3.1. Data Collection Techniques

Data were collected using multiple techniques to ensure the accuracy and richness of research information, including:

1. Questionnaires, distributed to employees directly involved in project execution, utilizing a Likert scale to measure perceptions related to each research variable.
2. In-depth interviews with project managers and key personnel to obtain complementary qualitative insights.
3. Direct observation of ongoing project activities to validate the implementation of managerial practices.
4. Documentation review, including project reports, organizational structures, procurement documents, and internal quality assurance procedures.

3.2. Operational Definitions of Variables

Each research variable is defined operationally to ensure clarity and consistency in measurement:

1. Communication Management (X1): Defined as the process of planning, distributing, and monitoring information within the project environment. Indicators include communication planning, information flow, and effectiveness of communication media.
2. Risk Management (X2): Defined as structured efforts to identify, analyze, and mitigate potential risks affecting project implementation. Indicators include risk identification, probability-impact assessment, and mitigation strategies.
3. Quality Management (X3): Refers to the implementation of TQM principles, ISO 9001:2015 standards, and continuous improvement practices to ensure project outputs meet predetermined quality requirements.
4. Procurement Management (X4): Defined as the process of selecting vendors, negotiating contracts, and evaluating vendor performance throughout the project lifecycle.

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5. Project Success (Y): Measured through indicators such as timeliness, budget accuracy, quality achievement, stakeholder satisfaction, and team performance efficiency.

3.3. Sample Collection Techniques

The study uses purposive sampling, a non-probability sampling technique in which respondents are selected based on specific criteria. Individuals chosen must:

1. Be directly involved in project implementation;
2. Have a minimum of one year of relevant work experience;
3. Possess knowledge of communication, risk, quality, or procurement processes within the company.

A total of 25 respondents who met these criteria were selected as the sample, representing project team members, managers, and procurement staff.

3.4. Data Analysis Techniques

The data were analyzed quantitatively using multiple linear regression analysis with the aid of EViews 12 software. The analysis included:

1. Descriptive statistics to summarize respondent perceptions;
2. Validity and reliability testing to ensure instrument accuracy;
3. t-tests to measure the partial influence of each independent variable;
4. F-test to determine simultaneous effects;
5. Coefficient of determination (R^2) to assess the strength of the overall model;
6. Classical assumption tests to validate regression feasibility.

These analytical techniques were used to evaluate the extent to which communication, risk, quality, and procurement management collectively influence project success.

4. RESULTS AND DISCUSSION

Variable	Regression Coefficient (β)	Significant (p-value)	Description
X_1-Communication Management	0,312	0,018	Significantly influential
X_2-Risk Management	0,256	0,022	Significantly influential
X_3-Quality Management	0,338	0,010	Significantly influential
X_4-Procurement Management	0,241	0,030	Significantly influential
R^2 = 0,791	This means that 79.1% of project success is influenced by these four variables.		

Based on the results of multiple regression analysis, all independent variables were shown to have a significant influence on project success at PT Teknologi Gotong Royong (GORO). This finding can be explained by GORO's high-tech operational characteristics, particularly its use of blockchain and asset tokenization systems. The communication management variable (β = 0.312; p = 0.018) had a significant influence because the success of the tokenization project is highly dependent on cross-divisional coordination-from the technology, legal, property, and operational teams. Blockchain system integration requires fast, precise communication and avoids miscommunication, especially during the process of writing smart contracts and synchronizing ownership data. This is why effective communication contributes strongly to project success.

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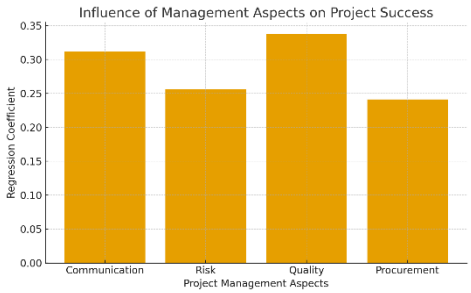
Risk management (β = 0.256; p = 0.022) also had a significant influence because the tokenization project carries complex risks, including technological risks such as bugs in the blockchain network, legal risks related to the validity of digital ownership, and market risks related to token liquidity. GORO implemented a risk identification process from the early stages and prepared mitigation measures based on system audits, encryption, and collaboration with the Financial Services Authority (OJK). This proactive response makes risk management a crucial factor in ensuring the project runs safely and in accordance with regulations.

Quality management (β = 0.338; p = 0.010) was recorded as the variable with the greatest influence. This is understandable because the quality of digital systems, especially blockchain platforms, must be stable, error-free, and capable of handling large transaction volumes. The implementation of TQM, ISO 9001:2015, quality assurance, and user acceptance testing ensured that every platform feature functioned optimally. Furthermore, the use of Six Sigma to reduce the blockchain transaction error rate to below 0.01% was a strong factor in enhancing the project's success.

Furthermore, procurement management (β=0.241; p=0.030) was also significant because property tokenization projects rely heavily on collaboration with external parties such as developers, technology vendors, digital notaries, and data security service providers. The procurement process, which utilized a Vendor Management System (VMS), digital tenders, and KPI-based evaluations, helped ensure transparent and high-quality partnerships. However, several administrative delays in vendor legal verification resulted in this variable having the lowest coefficient, although it remained significant.

Overall, the R^2 value of 0.791 indicates that 79.1% of the project's success can be explained by these four variables. This illustrates that the success of the GORO asset tokenization project was heavily influenced by solid communication integration, mature technology risk management, high system quality standards, and a professional and transparent procurement mechanism. The combination of these four variables is the foundation for GORO's success in completing the property digitization project effectively and sustainably.

4.1. Results



Based on the results of the multiple regression analysis described previously, this study found that all variables-communication management, risk management, quality management, and procurement management-had a significant influence on project success at PT Teknologi Gotong Royong. To provide a clearer visual representation of the level of contribution of each variable, the following graph is presented to show the magnitude of the regression coefficient (β) for each aspect of project management. This visualization is important because it allows readers to directly see which variables have the most dominant influence and understand how the integration of these four aspects supports the success of the asset tokenization project and the digitalization of business processes in the company.

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The graph also emphasizes that quality management has the largest contribution, followed by communication, risk, and procurement, thus providing a basis for the company to prioritize strengthening certain aspects in the implementation of subsequent technology projects.

Data collection was conducted through questionnaires, interviews, direct observation, and internal company documentation. A total of 25 respondents, consisting of project teams, management, and strategic vendors involved in the implementation of the property digitalization project by 2025, participated in this study. The following is a summary of the findings for each research variable.

4.1.1 Project Communication Management (X_1)

Questionnaire results indicate that 84% of respondents assessed communication between project teams as effective, supported by the use of collaborative platforms such as Microsoft Teams, Slack, and Trello. The company also implemented a RACI Chart to determine the roles and responsibilities of team members, particularly on blockchain-based system development projects. However, 16% of respondents stated that coordination between the technology and legal divisions still faces obstacles, particularly in the decision-making process related to project contracts, resulting in delays in several implementation stages.

4.1.2 Project Risk Management (X_2)

80% of respondents stated that risk identification is carried out from the initial phase through the development of a risk register. The main risks frequently encountered include technological risks such as bugs in the blockchain system, market risks in the form of potential low token liquidity, and legal risks related to the validity of digital ownership. Mitigation strategies employed include regular system audits, enhanced data encryption, and close collaboration with the Financial Services Authority (OJK) to ensure that every transaction meets applicable legal standards.

4.1.3 Project Quality Management (X_3)

The majority of respondents (87%) stated that the implementation of Total Quality Management (TQM) and the ISO 9001:2015 standard has improved efficiency in property digitalization projects. All stages of system development undergo quality assurance and user acceptance testing (UAT) before being released to users. Furthermore, the company implements Six Sigma principles to reduce transaction error rates, reaching an average of below 0.01% per 10,000 blockchain transactions, demonstrating a very high level of system stability and quality.

4.1.4 Procurement Management (X_4)

The vendor procurement system is conducted through digital-based tenders and partner reputation verification using a Vendor Management System (VMS). Seventy-eight percent of respondents stated that the procurement process was transparent, while 22% assessed

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that there were still administrative delays in the vendor legal verification stage. Vendor performance evaluations are conducted quarterly through vendor performance reviews based on Key Performance Indicators (KPIs), making it easier for companies to assess the consistent quality of partners involved in projects.

5. CONCLUSION

This study concludes that the four project management variables examined—communication management, risk management, quality management, and procurement management—each have a significant influence on project success at PT Teknologi Gotong Royong. The regression results demonstrate that quality management contributes the greatest impact, followed by communication, risk, and procurement. These findings align with the operational characteristics of the company, which relies on blockchain technology, smart contracts, and asset tokenization. The success of such technology-driven projects requires precise coordination across teams, proactive risk mitigation, consistent quality assurance, and reliable vendor procurement. The coefficient of determination ($R^2 = 0.791$) indicates that 79.1% of project success can be explained by these four variables, highlighting the importance of integrated project management in supporting the effective implementation of digital property investment projects.

Limitations

Despite generating strong empirical insights, this research is subject to several limitations. First, the sample size used (25 respondents) represents only internal project stakeholders and selected vendors, which may limit the generalizability of findings to broader organizational environments. Second, the research focuses on a single company operating within a specific technological model—blockchain-based property tokenization—thus the results may differ in organizations with different technological maturity or project characteristics. Third, the data relies heavily on perceptual responses obtained through questionnaires, which may contain subjective bias despite triangulation using interviews and observations. Fourth, this study does not include moderating or mediating variables such as leadership, organizational culture, or technological readiness, which may also contribute significantly to project success but remain outside the scope of current analysis.

Suggestion

Based on the findings and limitations, several suggestions are offered for both practitioners and future researchers. For the company, it is recommended that PT Teknologi Gotong Royong further strengthens cross-functional communication through automated dashboards and real-time monitoring systems to reduce delays in decision-making across departments. In terms of risk management, the company should expand its digital risk assessment framework, particularly regarding cybersecurity threats and regulatory changes in digital assets. Quality management practices can be enhanced by implementing continuous integration and continuous deployment (CI/CD) pipelines to ensure consistent system performance. Procurement processes should be improved by accelerating legal verification and applying

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predictive analytics in vendor assessment.

For future research, scholars are encouraged to expand sample sizes or conduct comparative studies with multiple companies operating in the digital asset, fintech, or property technology sectors. Including additional variables such as leadership style, organizational agility, digital capability maturity, or stakeholder engagement may enrich the explanatory power of future models. Longitudinal studies may also be beneficial to observe how project success evolves over different project phases and technological advancements.

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