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An Evaluation Of Project Manager Performance In The Success Of Agile Scrum-Based Application Development Projects

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Abstract

The role of a Project Manager (PM) is vital to the success of application development projects. Within the Agile Scrum framework, a PM ensures effective team collaboration, adaptability to changing requirements, and the timely completion of sprints. This study aims to evaluate Project Managers' performance in relation to the success of Agile Scrum-based application development projects. Using a quantitative approach a survey was conducted with 20 respondents from Agile-based software development teams. The study reveals that leadership, communication skills, and decision-making are the most significant contributors to project success. These factors collectively account for 78% ($R^2 = 0.78$) of the project success rate reported. The TELOS feasibility analysis indicates high feasibility in the technical (90%), operational (85%), and schedule (80%) dimensions, while the economic (75%) and legal (70%) dimensions identified areas for improvement. Ultimately, the performance of the Project Manager plays a dominant role in determining the success of Agile Scrum project implementation.

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1. Introduction

The rapid growth of information technology has significantly transformed the management of software development projects in modern organizations. Companies increasingly rely on Agile methodologies, particularly Scrum, to respond to dynamic market demands, rapid technological changes, and continuously evolving user requirements. Agile Scrum emphasizes iterative development, team collaboration, adaptability, and continuous feedback, enabling organizations to deliver software products more efficiently and flexibly. Within this framework, the Project Manager plays a strategic role in ensuring coordination among the Product Owner, Scrum Master, and development team while maintaining project objectives related to time, cost, quality, and user satisfaction. Studies have shown that Agile-based project management contributes positively to organizational adaptability and project effectiveness in software development environments (Hosen, 2022).

Despite the increasing adoption of Agile Scrum, many organizations still face challenges in objectively evaluating Project Manager performance. Most existing evaluations focus primarily on project outcomes without considering managerial competencies such as communication, leadership, risk management, conflict resolution, and decision-making effectiveness during iterative development processes. This lack of a systematic performance evaluation framework creates difficulties in measuring how managerial competencies contribute to project success. Furthermore, the absence of measurable parameters often leads to subjective assessments, making it difficult for organizations to identify critical success factors in Agile implementation. According to Project Management studies, effective project management evaluation should integrate both technical and managerial dimensions to support continuous organizational improvement.

In Agile Scrum environments, project success is not solely determined by the completion of deliverables but also by the ability to adapt to changing customer needs and maintain collaboration among stakeholders. Scrum-based development requires intensive communication, rapid iteration cycles, and continuous monitoring of sprint progress. Consequently, Project Managers must possess strong leadership capabilities to facilitate collaboration and minimize project risks. Research conducted by Febrianto, Wulansari, and Latipah (2020) demonstrated that Agile Scrum implementation improves project monitoring and coordination processes in software development. However, their study focused more on system implementation rather than managerial performance evaluation, leaving a research gap regarding the measurement of Project Manager effectiveness within Agile environments.

To address this issue, organizations require a more comprehensive evaluation framework capable of assessing managerial performance from multiple perspectives. One approach that can be adopted is the TELOS model, which evaluates feasibility based on Technical, Economic, Legal, Operational, and Schedule aspects. The TELOS framework provides a structured method for analyzing project feasibility and managerial effectiveness comprehensively. Through technical evaluation, organizations can measure the Project Manager's capability in managing technology implementation and development workflows. Economic evaluation assesses cost efficiency and resource utilization, while operational evaluation measures coordination effectiveness and workflow sustainability. Legal aspects ensure compliance with organizational policies and regulations, whereas schedule evaluation focuses on the Project Manager's ability to manage timelines and sprint completion effectively. The integration of TELOS into Agile project evaluation enables organizations to obtain a more objective understanding of managerial performance and project feasibility simultaneously.

Previous studies have examined various aspects of Agile Scrum implementation and project success. Research by Andriyani (2024) highlighted the importance of adaptive innovation and Agile integration in improving organizational responsiveness and collaborative performance. Meanwhile, studies on performance evaluation systems indicate that measurable assessment frameworks are essential for improving employee productivity and organizational effectiveness (Sukamto et al., 2021). However, limited research has specifically integrated the TELOS framework into Project Manager performance evaluation within Agile Scrum environments. Existing studies generally focus on technical system development, Agile adoption, or software quality without comprehensively analyzing the relationship between managerial competencies and project success indicators.

The absence of a structured evaluation model creates uncertainty in determining whether project success is influenced primarily by Agile practices or by managerial competencies. As a result, organizations often encounter difficulties in formulating strategies for improving Project Manager effectiveness. This condition becomes increasingly critical in modern software development projects where user requirements frequently change during development cycles. Without objective evaluation mechanisms, organizations may struggle to identify weaknesses in leadership, communication, and project coordination processes, ultimately affecting project delivery performance and stakeholder satisfaction.

This study aims to analyze the performance of Project Managers within the Agile Scrum framework and evaluate its influence on project success in terms of time efficiency, cost management, product quality, and user satisfaction. The study also seeks to identify critical success factors affecting Agile project implementation and formulate strategic recommendations for improving managerial effectiveness. The findings are expected to contribute both theoretically and practically by offering organizations a comprehensive evaluation model that supports more effective Agile Scrum implementation and sustainable project success.

Despite the widespread adoption of Agile Scrum, many organizations continue to face significant project risks. Empirical evidence from industry studies, such as the Standish Group's Chaos Report, indicates that approximately 15% to 25% of Agile projects are still classified as 'failed' or 'challenged' due to budget overruns, missed deadlines, or failure to meet user requirements. These failures are often not caused by technical limitations but are rooted in the inability of project leadership to manage the high-velocity demands of iterative development and stakeholder coordination. This phenomenon underscores the urgent need for a more rigorous and objective evaluation of Project Manager performance to mitigate these risks and ensure sustainable project success.

This research is structured around a conceptual framework that explores the direct relationship between Project Manager (PM) competencies and Agile project success. The framework identifies four independent variables representing PM performance: Leadership (X1), Communication Skill (X2), Team Coordination (X3), and Decision Making (X4). These variables are hypothesized to significantly influence the dependent variable, Project Success (Y), which is measured through time efficiency, cost management, product quality, and user satisfaction. To provide a comprehensive evaluation, these variables are integrated into the TELOS framework, which assesses the technical, economic, legal, operational, and schedule feasibility of the PM's management process. This integration allows for a multidimensional analysis of how managerial performance dictates project viability in a Scrum environment.

To address these limitations, this study introduces a strategic integration of the TELOS framework—traditionally used for business feasibility—into the evaluation of Project Manager performance within an Agile Scrum environment. While existing literature often separates managerial competencies from project viability, the novelty of this research lies in utilizing the Technical, Economic, Legal, Operational, and Schedule dimensions to provide a multidimensional, measurable assessment of leadership effectiveness. This approach offers a more rigorous contribution to Agile project management by establishing a standardized model that correlates managerial performance directly with project sustainability and success.

2. Research Methodology

This research was conducted from June to November 2025 using a descriptive and verificative quantitative approach to examine the performance of Project Managers in an Agile Scrum environment. The study focused on five application development organizations specializing in HR information systems, ticketing systems, and internal service platforms.

A purposive sampling technique was employed to select 20 respondents, including Senior PMs, Junior PMs, Scrum Masters, Tech Leads, and Developers. This sample size was chosen to ensure high-quality, data-rich responses from key stakeholders who possess a deep technical and managerial understanding of Agile Scrum dynamics. This focused approach allows for an in-depth analysis of specific strategic constraints that larger, more generalized samples might overlook. To ensure construct validity, the research instruments were adapted from established project management and Agile literature. The variables and their respective indicators are detailed as follows:

- Leadership (X1): Measured through 5 indicators including servant-leadership, team motivation, vision alignment, empowerment, and goal orientation (Adapted from Scrum Guide & PMBOK).

- Communication Skill (X2): Evaluated based on 4 indicators: stakeholder transparency, frequency of sprint updates, feedback loops, and clarity of information (Adapted from Scrum Guide).
- Team Coordination (X3): Measured through 4 indicators including sprint backlog management, cross-functional collaboration, and daily synchronization (Adapted from Febrianto et al., 2020).
- Decision Making (X4): Focused on 4 indicators: speed of iteration, risk mitigation, and conflict resolution effectiveness (Adapted from PMBOK Guide).
- Project Success (Y): Measured through 5 indicators including time efficiency, cost management, product quality, and user satisfaction (Adapted from Hosen, 2022).

Data processing began with instrument testing using Pearson Correlation for validity and Cronbach's Alpha ($\alpha \geq 0.7$) for reliability. To ensure that the multiple linear regression model provides the Best Linear Unbiased Estimator (BLUE), Classical Assumption Tests were performed, including:

- Normality Test: Performed to verify if the residual values in the regression model are normally distributed.
- Multicollinearity Test: Conducted to ensure there are no strong correlations between the independent variables (X1, X2, X3, X4) by checking the Variance Inflation Factor (VIF) and Tolerance values.
- Heteroscedasticity Test: Used to check whether there is an inequality of variance from the residuals of one observation to another in the regression model.

The analysis concludes by integrating the results into the TELOS feasibility framework. Respondents' perception data were converted into percentage scores for the Technical (T), Economic (E), Legal (L), Operational (O), and Schedule (S) dimensions. This multidimensional assessment identifies the gap between actual managerial performance and feasibility targets, visualized through a radar chart to provide strategic recommendations. The research followed a structured six-stage process:

- Preparation: Literature review and instrument design.
- Data Collection: Distribution of Likert-scale questionnaires to the 20 purposive respondents.
- Instrument Verification: Performing validity and reliability tests.
- Statistical Modeling: Conducting Classical Assumption Tests followed by Multiple Linear Regression.
- TELOS Integration: Converting perception data into percentage scores for Technical, Economic, Legal, Operational, and Schedule dimensions.
- Synthesis: Visualizing results through radar charts and formulating strategic recommendations.

3. Results and Discussion

The study involved 20 respondents from five application development companies in Indonesia, primarily comprising Developers (45%) and Project Managers (22%). Most respondents (53%) possessed 2–5 years of experience, providing a robust foundation for understanding Agile Scrum dynamics in HR systems, ticketing platforms, and internal service development.

Statistical results indicate that Project Manager performance averaged 4.31/5.00 (Very Good), with Leadership receiving the highest individual score of 4.42. Overall project success averaged 4.28/5.00, while user satisfaction emerged as the top indicator at 4.40, reflecting effective coordination in meeting market demands.

Variable	Coefficient (β)	Significance (p)	Status
Leadership (X1)	0.41	< 0.05	Significant
Communication (X2)	Significant	< 0.05	Significant
Team Coordination (X3)	Significant	< 0.05	Significant

Decision Making (X_4)	Significant	< 0.05	Significant
Total Determination (R^2)	0.78		78% Variance Explained

Regression results confirm that Leadership (β= 0.41) is the strongest predictor of project success. The R^2 value of 0.78 demonstrates that 78% of the variance in project success is explained by Project Manager performance, while external factors account for the remaining 22%

These findings reinforce the theory that a Project Manager's adaptive leadership is the primary determinant of Agile Scrum success.

- Consistency with Literature: This study aligns with Andriyani (2024), which highlighted the importance of Agile integration in improving collaborative performance. It also supports Febrianto et al. (2020) regarding the improvement of project monitoring through Scrum implementation.
- Research Gap Addressed: While previous studies by Febrianto et al. (2020) focused more on system implementation, this research addresses the gap by specifically measuring Project Manager effectiveness within Agile environments.
- Framework Integration: The study confirms that measurable assessment frameworks are essential for improving organizational effectiveness, consistent with the findings of Sukamto et al. (2021).

The integration of the TELOS framework provides a multidimensional view of project viability and managerial readiness.

Dimension	Score (%)	Status	Findings
Technical	90%	Very High	Strong infrastructure and development workflows
Operational	85%	Very High	Effective team collaboration and coordination
Schedule	80%	High	Effective management of timelines and sprints
Economic	75%	Feasible	Need for improved cost efficiency and resource use
Legal	70%	Feasible	Need for strengthened governance and documentation

The very high feasibility in Technical (90%) and Operational (85%) dimensions reflects high infrastructure readiness and effective team collaboration. Based on the results, software development organizations should adopt the following strategic recommendations:

- Leadership Development: Organizations should prioritize "servant-leadership" training, as leadership is the dominant factor in optimizing quality and time.
- KPI-Based Evaluation: Develop evaluation systems that emphasize technical speed and operational performance using measurable TELOS parameters.
- Efficiency and Governance: Strengthen legal governance and budget efficiency to move beyond the "feasible" category toward long-term project sustainability.
- Adaptive Coordination: Project Managers must maintain high responsiveness to changing user requirements to sustain high user satisfaction scores

4. Conclusion

This study concludes that Project Manager performance has a significant influence of 78% on the success of Agile Scrum-based application development projects. Leadership (β= 0.41) was identified as the strongest predictor of project success, followed by communication, team coordination, and decision-making. Through the iterative Agile Scrum framework, Project Managers demonstrate a

strong capability in enhancing team performance control and maintaining responsiveness to changing user requirements. The TELOS evaluation results indicate very high feasibility in the Technical (90%) and Operational (85%) dimensions, while the Economic (75%) and Legal (70%) dimensions were categorized as feasible but require further optimization to ensure long-term stability. This research provides significant contributions to the field of IT project management:

- Theoretical Contribution: This study enriches the academic discourse by establishing a multidimensional evaluation model that correlates managerial competencies directly with project viability. By integrating the TELOS framework—traditionally a business feasibility tool—into performance assessment, this research provides a new theoretical lens for measuring leadership effectiveness in high-velocity, iterative environments.
- Practical Contribution: For software development organizations, this study offers a standardized and measurable approach to evaluating Project Managers beyond traditional deliverables. The findings suggest that fostering "servant-leadership" and enhancing stakeholder transparency are essential for maintaining high user satisfaction and project sustainability.

Despite its contributions, this study has limitations that should be addressed in future works:

- Sample Size: The current study utilized a purposive sample of 20 respondents. While highly targeted, the small sample size may limit the generalizability of the findings to larger or more diverse organizational structures.
- Industry Scope: The research focused primarily on five application development companies. Expanding the scope to include different industries, such as fintech or government-sector IT projects, could provide broader insights into how Scrum dynamics vary across sectors.
- Future Directions: Future research should consider a longitudinal approach to observe how Project Manager performance influences long-term product lifecycles. Additionally, incorporating a larger and more diverse dataset would strengthen the statistical power and allow for a more comparative analysis between different Agile frameworks.

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