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Management project performance in Indonesia's food estate development: A stakeholder, institutional, and communication perspective

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A B S T R A C T

This study examines the factors influencing the performance of food estate projects in Indonesia, focusing on the roles of leadership, stakeholder engagement, institutional support, and project communication. A positivist research paradigm was adopted, employing a quantitative approach with Structural Equation Modeling (SEM-PLS) to test the hypotheses and analyze the relationships between these variables. The study found that leadership significantly impacts project performance, particularly through its influence on project communication, which serves as a key mediator. While stakeholder engagement did not show a direct significant relationship with project communication, its role in fostering trust, reducing resistance, and ensuring stakeholder needs are met is crucial for overall project success. Institutional support directly contributes to project performance by providing resources, supportive policies, and technical assistance, thereby enhancing the effectiveness of project communication. Project communication, as a mediator, integrates leadership, stakeholder engagement, and institutional support to drive successful project outcomes. These findings underscore the importance of transformational leadership, effective communication, and institutional support in improving food estate project performance in Indonesia. The results offer valuable insights for practitioners and policymakers aiming to enhance project outcomes through strategic management practices.

1. Introduction

The escalating global demand for sustainable agricultural practices and food security has emphasized the need for innovative development strategies, particularly in developing nations (Brooks & Loevinsohn, 2011; Tilman et al., 2011). As one of the world's leading agrarian countries, Indonesia plays a pivotal role in addressing these challenges. The Food Estate Development Program represents a transformative initiative aimed at ensuring food sufficiency while bolstering rural economic empowerment (Dukheri & Amer, 2024; Sundram, 2023; Sundram & Brennan, 2024). By integrating large-scale agricultural production with cutting-edge technology and robust infrastructure, this program seeks to optimize productivity while maintaining ecological sustainability. However, the complexity of managing such a large-scale initiative necessitates a comprehensive framework that incorporates leadership, stakeholder engagement, institutional support, and effective communication. According to the Ministry of Agriculture of the Republic of Indonesia, this shift from conventional farming to a large-scale business model emphasizes technological innovation and institutional development to achieve economic and ecological goals.

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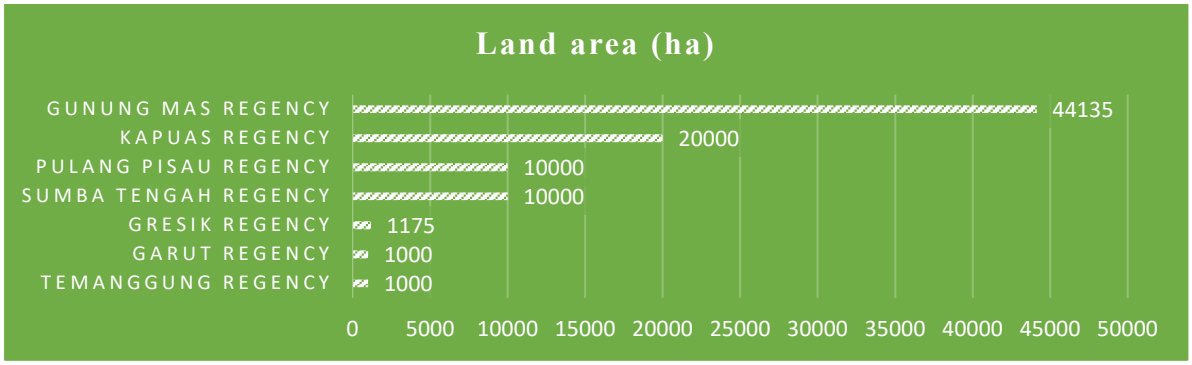

Fig. 1. Food Estate Development Areas in Indonesia 2024

Source: Ministry of Agriculture

As illustrated in Fig. 1, the Food Estate Development Program has targeted diverse agro-climatic regions in Indonesia, starting with Central Kalimantan, East Java, West Java, and East Nusa Tenggara. In Central Kalimantan, the initiative began in 2020 by utilizing 30,000 hectares of existing rice fields in Pulang Pisau and Kapuas regencies. By 2021, the project expanded to 44,135 hectares in Gunung Mas Regency, with planned growth to 70,000 hectares by 2024, supported by infrastructure investments from the Ministry of Public Works and Housing (PUPR). Similar advancements are evident in other regions. In Sumba Tengah, food estate activities focus on rice and maize cultivation, with expansion targets reaching 10,000 hectares by 2024. Gresik prioritizes mango cultivation, integrated with intercropping systems for maize, peanuts, and other commodities, expanding from 100 hectares in 2022 to 1,175 hectares by 2024. Meanwhile, regions like Garut and Temanggung emphasize high-value horticultural crops such as chili, shallots, and potatoes, with projected growth from hundreds to over 1,000 hectares. Despite these achievements, the ambitious scope of the food estate initiative presents considerable challenges. Effective leadership is required to navigate the complexities of large-scale agricultural transformation, while stakeholder engagement is crucial for fostering local support and aligning diverse interests. Institutional support, including policy frameworks and resource allocation, forms the backbone of these projects, ensuring their continuity and scalability. Moreover, effective communication serves as a critical enabler, facilitating coordination and addressing potential conflicts among stakeholders. This study aims to examine how these key factors: leadership, stakeholder engagement, institutional support, and communication interact to influence project performance. By identifying the mediating role of communication, the study contributes to optimizing project management frameworks for sustainable agricultural development in Indonesia. The Food Estate Development Program embodies Indonesia's commitment to innovative agricultural transformation, yet its success depends on addressing several fundamental research questions.

RQ1: How does leadership impact the performance of food estate projects?
RQ2: What role does stakeholder engagement play in driving project outcomes?
RQ3: How does institutional support contribute to achieving successful development?
RQ4: What extent does communication mediate the relationship between leadership, stakeholder engagement, institutional support, and overall project performance?

This study seeks to answer these questions through an in-depth analysis, offering practical insights for policymakers and practitioners. The findings aim to enhance the understanding of sustainable agricultural project management, providing valuable lessons not only for Indonesia but also for other developing nations striving for food security and rural development. By addressing these critical issues, this research advances the global discourse on agricultural innovation and rural economic empowerment. It offers actionable recommendations for improving project design, implementation, and evaluation, ensuring the long-term viability of initiatives like the Food Estate Development Program. With its focus on leadership, stakeholder dynamics, institutional frameworks, and communication strategies, this study underscores the multidimensional nature of sustainable development, bridging gaps between theory and practice in managing complex agricultural systems. Through its findings, the research aspires to contribute to the broader goals of global food security, ecological sustainability, and socio-economic resilience.

2. Literature Review

2.1 Stakeholder Theory

Stakeholder Theory was first introduced by R. Edward Freeman through his book Strategic Management: A Stakeholder Approach in 1984. This theory emerged as a response to the traditional management approach that primarily focused on shareholder interests. Freeman (2010) argued that organizations are not only accountable to shareholders but also to all parties impacted by their activities. These parties, referred to as stakeholders, include employees, customers, suppliers, local communities, and the environment. This perspective underscores that an organization's long-term success depends not solely

on financial gains but also on its ability to create value for all stakeholders. This approach marked a significant milestone in the evolution of business ethics, sustainability, and modern management practices. Freeman (1984) emphasized that stakeholder engagement is a key element in achieving organizational goals. Organizations must develop effective strategies to identify, understand, and address the needs and expectations of their stakeholders (Balser & McClusky, 2005; Harrison & St. John, 1996; Pinelli & Maiolini, 2017; Savage et al., 1991). Adopting an inclusive approach to stakeholder management fosters harmonious relationships and drives the achievement of shared and sustainable objectives.

The application of Stakeholder Theory is particularly relevant in the context of food estate projects, which are strategic programs aimed at enhancing food security through integrated agricultural land management. In such projects, stakeholders include government bodies, farmers, local communities, financial institutions, and non-governmental organizations. Success depends not only on the organization's internal efficiency but also on its ability to establish productive relationships with external parties (Greenhalgh, 2001; Sivadas & Dwyer, 2000; Walsh & Seward, 1990). Active stakeholder involvement is a crucial factor in determining the project's outcomes. Stakeholder Theory highlights the importance of effective communication in building relationships with stakeholder (De Bussy et al., 2003; Friedman & Miles, 2002; Slabbert & Barker, 2014; Uribe et al., 2018). Transparent and inclusive communication helps identify stakeholders' interests, minimize conflicts, and foster trust. In the context of food estate projects, engaging stakeholders through open dialogue ensures that the needs of local communities and environmental sustainability are not overlooked. This approach enhances organizational accountability and transparency, leading to increased public support and improved project performance. Moreover, this theory suggests that the quality of stakeholder engagement acts as a driver of project success. By involving stakeholders in decision-making processes, organizations enhance project legitimacy and create a sense of shared ownership among parties. This, in turn, strengthens project support, reduces conflict risks, and facilitates long-term sustainability.

2.2 Transformational Leadership Theory

The Transformational Leadership Theory was initially introduced by Downton (1973) and further developed by Burns (1978). Burns defined transformational leadership as a process in which leaders and followers mutually influence each other to achieve higher levels of morality and motivation. Transformational leaders inspire their followers to transcend personal interests in pursuit of collective goals, often emphasizing vision, values, and positive change. In 1985, Bernard M. Bass expanded this theory, identifying four key dimensions of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1985). These dimensions established the theory as a critical framework in modern leadership studies, particularly in organizational change and employee empowerment. Transformational leaders are not only directors but also inspirators, motivating team members to innovate, think critically, and actively contribute to organizational goals. In the context of food estate projects, transformational leadership is highly relevant. These projects often involve large-scale operations and diverse stakeholders, necessitating leaders who can create a shared vision, motivate teams, and drive innovation. Transformational leaders with strong vision and effective communication skills facilitate better collaboration among internal and external stakeholders. Such leadership fosters an inclusive and productive work environment, where all parties feel involved in decision-making processes. Additionally, transformational leaders build cooperative relationships within project teams while maintaining clear and transparent communication with external stakeholders. This is particularly vital in food estate projects, where resistance to change is a common challenge. By adopting an inclusive approach, transformational leaders reduce resistance, clarify the benefits of change, and foster a sense of ownership toward project goals. Research by Bass & Avolio (1994) indicates that transformational leadership creates a supportive environment for positive change, enhances stakeholder engagement, and strengthens project communication.

2.3 Institutional Theory

Institutional Theory is a sociological perspective that focuses on the role of institutions in shaping individual and organizational behavior. Rooted in the works of early sociologists like Max Weber and Emile Durkheim, this theory emphasizes the significance of norms, values, and social structures in shaping society (Emirbayer, 1996; Royce, 2015). In the mid-20th century, the theory underwent significant development with the emergence of neo-institutionalism, popularized by sociologists such as John Meyer and Richard Scott. Neo-institutionalism highlights the importance of the institutional environment in determining an organization's legitimacy (Heady, 2001; Serfontein et al., 2022). Isomorphism, the process of organizations becoming similar to one another to meet societal expectations, is a central mechanism in this theory, enabling organizations to strengthen their position in society. Thus, this theory provides valuable insights into how institutional structures influence stability, innovation, and change in various social contexts, including education, business, and government. In the study of project performance, Institutional Theory offers a deep understanding of how norms, regulations, and structural supports contribute to project success (DiMaggio & Powell, 1983). One significant application of this theory is in the context of food estate projects, which rely on interactions between various actors and institutions to achieve their objectives. Institutional support, in this case, encompasses government policies, applicable regulations, and resources provided by relevant institutions. Food estate projects require effective coordination among institutions, from the central to local governments, as well as the private sector and the community. This is where institutional theory becomes crucial, as organizations involved in these projects must adapt to the expectations and demands of the broader institutional environment.

A core concept in Institutional Theory is the need for organizations to achieve legitimacy by adapting to prevailing social expectations. In the context of food estate projects, this means that project success hinges on the implementers' ability to meet the expectations set by relevant institutions, in terms of quality, time, and budget. Strong institutional support can mitigate common project challenges, such as funding issues, permits, or operational obstacles. Moreover, this support enhances effective communication among stakeholders, a key factor in the smooth implementation of projects. Institutional Theory also emphasizes the importance of well-structured communication networks in improving project performance. In food estate projects, effective communication between government, private sector, and local communities is essential to ensure the timely and appropriate allocation of resources. When stakeholders coordinate well, it not only helps overcome administrative hurdles but also accelerates strategic decision-making, ultimately contributing to overall project performance. Furthermore, applying this theory to food estate projects reveals that project success is not solely determined by internal organizational factors but also by how the organization interacts with various external institutions that hold power and influence. Therefore, it is essential for each involved organization to continuously adapt to evolving institutional dynamics, maintain good relationships with various stakeholders, and ensure that the project aligns with the prevailing policy and regulatory framework.

3. Research Framework

The integration of stakeholder theory, transformational leadership theory, and institutional theory provides a comprehensive understanding of the factors influencing project performance, particularly in food estate development. stakeholder theory emphasizes the need to fulfill stakeholders' expectations to enhance project outcomes. transformational leadership theory highlights the role of leaders in inspiring, motivating, and guiding teams while fostering effective communication and stakeholder engagement. institutional theory underscores the importance of norms, regulations, and structural support in shaping organizational behavior and project outcomes. With project communication as a mediating factor, these theories collectively explain the dynamics influencing project success. This integrated framework underscores that leadership, stakeholder engagement, and institutional support must be effectively managed to ensure sustainable project performance.

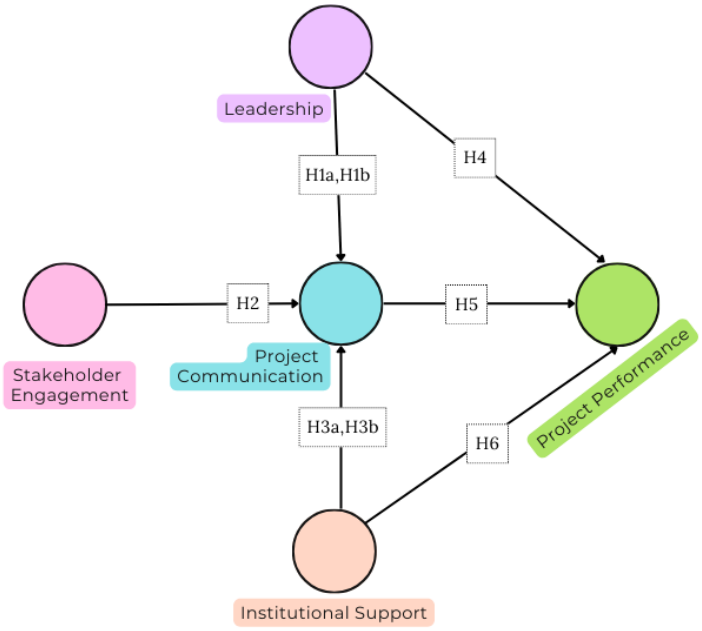

Fig. 2. Conceptual Framework

The conceptual framework in Fig. 2 illustrates that project performance, as the cornerstone of project success, can be enhanced by optimizing factors such as leadership, project communication, institutional support, and stakeholder engagement. Their interrelationships are as follows.

The Relationship Between Leadership, Stakeholder Engagement, and Institutional Support with Project Communication

Leadership is the ability to influence and guide others to achieve shared goals. A leader not only provides instructions but also inspires, motivates, and mentors their team members. Previous studies consistently highlight a significant relationship between leadership, stakeholder engagement, institutional support, and communication in project success. For instance, transformational leadership, which emphasizes vision, inspiration, and change, has been shown to positively impact project success through effective communication (Ali & Rasheed, 2021). In this context, communication is not merely a success factor but also a vital skill for project managers. Effective communication practices significantly enhance project outcomes by fostering better understanding, collaboration, and trust among team members (Nyandongo & Davids, 2020). Within specific project environments, the interaction between leadership styles and communication becomes increasingly critical.

Furthermore, involving stakeholders early and consistently throughout the project lifecycle is essential. Research indicates that managing stakeholder expectations and interests through timely and purposeful communication significantly contributes to project success. This includes identifying key stakeholders, understanding their needs, and maintaining open lines of communication (Alqaisi, 2018). Moreover, institutional support plays a pivotal role in successful project communication. Supportive institutional cultures and collaborative frameworks enhance leadership effectiveness and stakeholder engagement (Owan et al., 2024). Institutions fostering collaborative environments and providing necessary resources and support can substantially improve project outcomes. By integrating strong leadership, proactive stakeholder engagement, and robust institutional support, organizations can enhance their communication strategies and achieve better project results. Based on the findings of prior research, the study hypotheses are formulated as follows:

H_{1a}: *Leadership positively influences project communication.*
H_2: *Stakeholder engagement positively influences project communication.*
H_{3a}: *Institutional support positively influences project communication*.

The Relationship between Leadership, Project Communication, and Institutional Support with Project Performance

The relationship between leadership, project communication, and institutional support with project performance has been the focus of various literature studies. This is due to consistent findings in prior research highlighting the critical role of leadership in project performance. Effective leaders are capable of articulating a clear vision, motivating their teams, and navigating challenges with strategic foresight. Such leadership styles foster a positive project environment, which is crucial for achieving project objectives. Leaders who prioritize open and transparent communication can significantly enhance team collaboration and trust, leading to better project outcomes (Ahmed & Anantatmula, 2017; Liphadzi et al., 2015). Project communication is another vital factor influencing project performance. Clear, consistent, and timely communication ensures that all team members are aligned with the project's goals and are aware of their roles and responsibilities. Effective communication facilitates early identification of potential issues, enabling swift resolution and maintaining project momentum. Research indicates that projects with strong communication strategies are more likely to be completed on time and within budget, as they minimize misunderstandings and conflicts (Nyandongo & Davids, 2020; Wang & Hu, 2012). Institutional support, which encompasses resources, policies, and a supportive organizational culture, is essential for project success. Institutions that provide adequate resources and foster a collaborative environment empower project teams to perform at their best. Supportive institutional policies can streamline processes and reduce bureaucratic obstacles, allowing project teams to focus on core tasks. Studies by Owan et al. (2024) and San & Guo (2023) reveal that projects backed by strong institutional support are more likely to achieve their objectives and deliver high-quality outcomes. Based on the aforementioned findings, the research hypotheses are formulated as follows:

H_4: *Leadership positively influences project performance.*
H_5: *Project communication positively influences project performance.*
H_6: *Institutional support positively influences project performance*.

The Role of Project Communication as a Mediator between Leadership, Institutional Support, and Project Performance

Project communication plays a pivotal mediating role in the relationship between leadership, institutional support, and project performance. Effective communication serves as a bridge, ensuring that the vision and direction set by leaders are clearly conveyed to the project team and stakeholders. This clarity helps align the team's efforts with project objectives, thereby enhancing overall performance. Leaders who communicate effectively can inspire and motivate their teams, fostering a collaborative environment that is critical to project success (McKinsey, 2017; Minois, 2023a). Institutional support, which encompasses the provision of resources, policies, and a supportive organizational culture, is also essential for project success. However, the full benefits of institutional support can only be realized when effective communication is in place. Clear communication ensures that the resources and support provided by institutions are utilized efficiently and effectively. This facilitates the timely resolution of issues or challenges, maintaining project momentum and ensuring that the project stays on track (Anh, 2019). In summary, project communication acts as a crucial mediator that strengthens the relationships between leadership, institutional support, and project performance. By fostering clear and consistent communication, project managers can ensure that the directives from leadership and resources from institutional support are effectively integrated into the project, leading to improved performance and successful outcomes (Minois, 2023b). Building on the findings of previous research, the following hypotheses are proposed:

H_{1b}: *Project communication mediates the relationship between leadership and project performance.*
H_{3b}: *Project communication mediates the relationship between institutional support and project performance.*

4. Method

This study adopts a positivist research paradigm, emphasizing objectivity and hypothesis testing to explore the influence of leadership, stakeholder engagement, and institutional support on project performance in food estate projects, with project communication as a mediating variable. A quantitative approach was employed, and data were analyzed using Structural

Equation Modeling with Partial Least Squares (SEM-PLS). This method was selected due to its ability to handle complex relationships, its suitability for small to medium sample sizes, and its capacity to evaluate both direct and indirect effects simultaneously. The sample size was calculated using Lameshow's formula, which is appropriate for determining sample size in finite populations while ensuring representativeness. The formula is as follows:

$$n = \frac{Z^2.P.(1-P)}{d^2}$$

In this study, the parameters include a confidence level of 95% (Z=1.96), an estimated population proportion of 0.5 (*P*), and a margin of error (*d*) set at 0.05. Substituting these values yields:

$$n = \frac{1.96^2.0{,}5.(1-0{,}5)}{0{,}05^2} = 384{,}16$$

Based on this calculation, the sample size was rounded up to 385 respondents. Respondents were selected from stakeholders directly involved in food estate projects, including project managers, team members, and institutional representatives, ensuring diverse perspectives and a comprehensive understanding of the phenomena being studied. Data were collected using structured questionnaires adapted from validated scales in prior research. The questionnaire items measured constructs related to leadership, stakeholder engagement, institutional support, project communication, and project performance. A seven-point Likert scale was employed, ranging from 1 (strongly disagree) to 7 (strongly agree), allowing for greater sensitivity in capturing respondents' perceptions and preferences. Data analysis followed a two-step process. First, the measurement model was evaluated to ensure construct validity and reliability. Convergent validity was assessed using the Average Variance Extracted (AVE), with all constructs meeting the threshold of 0.5 or higher. Discriminant validity was confirmed through the Fornell-Larcker criterion and cross-loadings. Internal consistency was verified by composite reliability, with all constructs exceeding the recommended threshold of 0.6.

The structural model was then tested to evaluate the hypothesized relationships. SEM-PLS was used to estimate path coefficients and assess the mediating role of project communication. The bootstrapping method with 5,000 resamples was applied to evaluate the significance of direct and indirect effects. This approach provided robust confidence intervals for hypothesis testing and allowed for detailed insights into the relationships among variables. This methodology offers a rigorous and systematic framework for investigating the factors influencing project performance in food estate initiatives. The findings aim to provide valuable insights for practitioners and policymakers to enhance project outcomes through strategic leadership, active stakeholder engagement, and robust institutional support, mediated by effective project communication.

5. Result and Discussion

5.1 Respondent Characteristics

In this study, a total of 385 respondents were involved, each of whom played a role in the development of food estate projects in Indonesia. The sample was designed to represent a diverse range of stakeholders to ensure comprehensive insights into the factors affecting project performance. The respondents were selected from various roles within the projects, including project managers, team members, and institutional representatives. This diversity of perspectives is critical for understanding how leadership, stakeholder engagement, institutional support, and communication impact project outcomes. The characteristics of the respondents are summarized in Table 1.

Table 1
Respondent Characteristics

Characteristic	Category	Frequency (n = 385)	Percentage (%)
Role in the Project	Project Managers	96	25
	Team Members/Staff	154	40
	Institutional Representatives	135	35
Gender	Male	239	62
	Female	146	38
Age Range	21–30 years	69	18
	31–40 years	139	36
	41–50 years	108	28
	Above 50 years	69	18
Educational Background	High School Diploma	39	10
	Bachelor's Degree	231	60
	Master's Degree or Higher	115	30
Involvement in Food Estate Development	Direct involvement in implementation	212	55
	Strategic or planning roles	115	30
	Advisory or policy-making roles	58	15

Source: Survey data, 2024

Table 1 presents the demographic and professional characteristics of the 385 respondents involved in the study. A majority of the respondents were team members/staff (40%), followed by institutional representatives (35%) and project managers (25%), reflecting a diverse range of perspectives from different roles within the food estate projects. In terms of gender, 62% of the respondents were male, while 38% were female, which aligns with the gender distribution typically seen in large-scale infrastructure projects. Regarding age, 36% of respondents were aged 31–40 years, while 28% were between 41 and 50 years, and 18% were in both the 21–30 and above 50 age groups, indicating a balanced mix of experience levels. Educationally, the majority of respondents (60%) held a bachelor's degree, 30% had a master's degree or higher, and 10% had only a high school diploma, suggesting a highly educated sample. Finally, with respect to their involvement in food estate development, 55% of respondents were directly involved in project implementation, 30% were in strategic or planning roles, and 15% were involved in advisory or policy-making roles. This diverse respondent profile ensures that the study captures a wide range of insights from various perspectives across the food estate development process.

5.2 Measurement Model

The evaluation of the reflective measurement model aims to assess the reliability and validity of the data used in this study (Henseler et al., 2009). Individual item reliability is considered adequate when the factor loading of an item exceeds 0.6 for its respective construct or dimension. The results of the measurement model assessment, including factor loadings, construct reliability, and validity, are presented in Fig. 3 and Table 2.

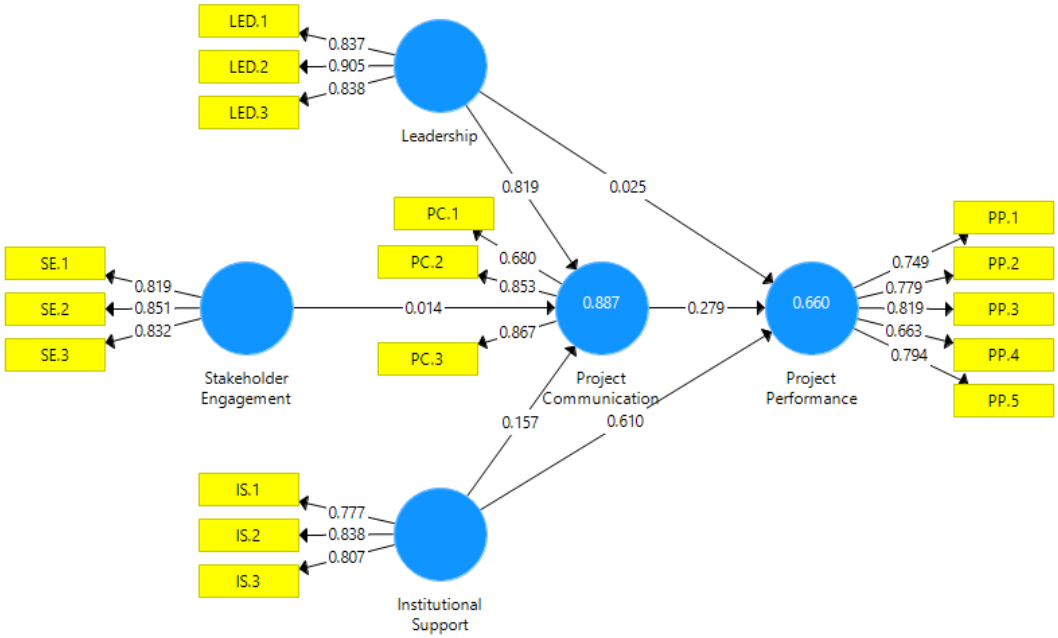

Fig. 3. Measurement Model

Table 2 and Fig. 3 demonstrate the reliability and validity of the constructs used in this study, evaluated through item loadings, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). All item loadings exceeded the acceptable threshold of 0.6, indicating good individual item reliability. The Cronbach's Alpha values for all constructs ranged from 0.723 to 0.824, satisfying the minimum threshold of 0.7, which indicates internal consistency. Composite Reliability (CR) values were above 0.7 for all constructs, further confirming the reliability of the measures. The AVE values, ranging from 0.581 to 0.740, exceeded the recommended minimum of 0.5, demonstrating convergent validity. Specifically, "Leadership" exhibited the highest AVE (0.740), indicating strong shared variance among its indicators, while "Project Performance" showed the lowest AVE (0.581), which still meets the validity criterion. These results confirm that the measurement model is both reliable and valid for analyzing the relationships among the constructs in the context of food estate project performance. Table 3 presents the discriminant validity results using the Fornell-Larcker Criterion. The diagonal values in bold represent the square root of the Average Variance Extracted (AVE) for each construct, while the off-diagonal values indicate the correlations between constructs. The results show that the square root of the AVE for each construct is higher than its correlations with other constructs, indicating adequate discriminant validity. For example, the square root of the AVE for Institutional Support is 0.807, which is greater than its correlations with Leadership (0.668), Project Communication (0.715), Project Performance (0.792), and Stakeholder Engagement (0.759). Similarly, Leadership has a square root of AVE value of 0.861, exceeding its correlations with all other constructs. This pattern is consistent across all constructs, confirming that each construct is empirically distinct and capable of measuring unique aspects of the research model.

Table 2
Construct Reliability and Validity

Construct/Item/indicator	Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Institutional Support				
IS.1: The organization where I work provides sufficient resources to support the implementation of the food estate project.	0.777	0.733	0.849	0.652
IS.2: Policies and regulations from relevant institutions strongly support the success of the food estate project.	0.838			
IS.3: The technical and administrative assistance provided by institutions facilitates the successful achievement of project objectives.	0.807			
Leadership				
LED.1: The project leader demonstrates strong abilities in guiding the team toward achieving project goals.	0.837	0.824	0.895	0.740
LED.2: The project leader consistently motivates the team to perform better.	0.905			
LED.3: The project leader makes effective decisions when addressing project challenges.	0.838			
Project Communication				
PC.1: Communication within the project team is open and clear.	0.680	0.723	0.845	0.647
PC.2: Information about project progress is always delivered promptly to all parties involved.	0.853			
PC.3: The communication mechanisms in this project help resolve conflicts or issues efficiently.	0.867			
Project Performance				
PP.1: The project was completed on schedule as planned.	0.749	0.819	0.874	0.581
PP.2: The project achieved the predetermined quality targets.	0.779			
PP.3: The project was managed within an efficient budget, avoiding resource wastage.	0.819			
PP.4: Stakeholders were highly satisfied with the project outcomes.	0.663			
PP.5: The project had a significant positive impact on the development of the food estate in the area.	0.794			
Stakeholder Engagement				
SE.1: Stakeholders actively participate in decision-making processes related to the food estate project.	0.819	0.781	0.872	0.695
SE.2: Stakeholders' needs and input are well considered throughout the project implementation.	0.851			
SE.3: Communication with stakeholders enhances the success of the project.	0.832			

Table 3
Discriminant validity (Fornell-Larcker Criterion)

Construct	Institutional Support	Leadership	Project Communication	Project Performance	Stakeholder Engagement
Institutional Support	0.807				
Leadership	0.668	0.861			
Project Communication	0.715	0.934	0.805		
Project Performance	0.792	0.643	0.691	0.762	
Stakeholder Engagement	0.759	0.707	0.712	0.708	0.834

5.3 Structural Model

Henseler et al. (2009) highlight that bootstrapping in structural equation modeling using PLS is highly effective for enhancing the reliability and accuracy of results. By repeatedly resampling the data, bootstrapping facilitates the calculation of confidence intervals for path coefficients, statistical significance testing, and reduces estimation bias. Additionally, bootstrapping improves model stability, tests mediation hypotheses, and analyzes standardized regression coefficients as part of the analysis. The results of this process are presented as follows.

Table 4
R-square value

Endogenous variable	R Square	R Square Adjusted
Project Communication	0.887	0.886
Project Performance	0.660	0.657

Table 4 presents the R-square values for the endogenous variables in the model. For Project Communication, the R-square value is 0.887, indicating that 88.7% of the variance in project communication is explained by the predictors, namely Leadership, Stakeholder Engagement, and Institutional Support. This suggests a very strong explanatory power of these variables in shaping project communication. The adjusted R-square value of 0.886 further confirms the model's robustness, accounting for the number of predictors included. For Project Performance, the R-square value is 0.660, meaning that 66% of the variance in project performance is explained by Leadership, Project Communication, and Institutional Support. This demonstrates a moderate to strong influence of these factors on project performance, with the adjusted R-square of 0.657 indicating a good fit while considering model complexity. Overall, both models show substantial explanatory power, with Project Communication having a higher R-square value compared to Project Performance.

Table 5
Path Coefficients

Hypothesis test	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Test results
Institutional Support → Project Communication	0.157	0.157	0.038	4.100	0.000	Accept
Institutional Support → Project Performance	0.610	0.607	0.046	13.398	0.000	Accept
Leadership → Project Communication	0.819	0.817	0.023	35.438	0.000	Accept
Leadership → Project Performance	-0.025	-0.019	0.106	0.235	0.814	Reject
Project Communication → Project Performance	0.279	0.277	0.108	2.588	0.010	Accept
Stakeholder Engagement → Project Communication	0.014	0.017	0.034	0.396	0.692	Reject

The hypothesis test results in Table 5 indicate that not all hypothesized relationships are statistically significant. Institutional support significantly and positively influences project communication ($\beta = 0.157$, $p = 0.000$) and project performance ($\beta = 0.610$, $p = 0.000$), leading to the acceptance of these hypotheses. Similarly, leadership has a significant positive influence on project communication ($\beta = 0.819$, $p = 0.000$). Additionally, project communication is proven to have a positive impact on project performance ($\beta = 0.279$, $p = 0.010$), supporting the proposed hypothesis. However, the hypotheses that leadership directly influences project performance ($\beta = -0.025$, $p = 0.814$) and that stakeholder engagement influences project communication ($\beta = 0.014$, $p = 0.692$) are not statistically supported, as the p-values for these relationships exceed 0.05. Consequently, Hypothesis 4 and Hypothesis 2 are rejected. These findings suggest that the effect of leadership on project performance is more effective through a mediating pathway, while stakeholder engagement does not have a direct significant influence on project communication in the context of this study.

Table 6
Specific Indirect Effects

Hypothesis test	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Test-results
Institutional Support → Project Communication → Project Performance	0.044	0.043	0.019	2.365	0.018	Accept
Leadership → Project Communication → Project Performance	0.228	0.226	0.088	2.605	0.009	Accept

The results of the hypothesis testing in Table 6 indicate that project communication significantly mediates the relationship between both institutional support and leadership with project performance. For Hypothesis 3b, the indirect effect of institutional support on project performance through project communication is statistically significant, with an original sample value of 0.044, a T-statistic of 2.365 (>1.96), and a p-value of 0.018 (<0.05). This supports the acceptance of the hypothesis, indicating a partial mediation. Both the direct and indirect effects between institutional support and project performance are statistically significant, suggesting that institutional support influences project performance both directly and through the mediating variable, project communication. For Hypothesis 1b, project communication mediates the relationship between leadership and project performance. The indirect effect has an original sample value of 0.228, a T-statistic of 2.605 (>1.96), and a p-value of 0.009 (<0.05). However, the direct effect of leadership on project performance is not statistically significant, as its confidence interval includes zero. This indicates a full mediation, meaning the influence of leadership on project performance occurs entirely through the mediating variable, project communication. These findings highlight the essential role of project communication in ensuring that both leadership and institutional support are effectively translated into improved project outcomes, with communication serving as a complete bridge for leadership and a partial enhancer for institutional support.

6. Discussion

The findings of this study both corroborate and enhance existing theories and prior research, offering a nuanced understanding of the factors influencing project performance in Indonesia's food estate development initiatives. By situating these

findings within the frameworks of stakeholder theory (Freeman, 1984), transformational leadership theory (Bass, 1985), and institutional theory (DiMaggio & Powell, 1983), this study provides a comprehensive perspective on the interplay of institutional support, leadership, project communication, and stakeholder engagement in driving project success. Institutional theory underscores the pivotal role of organizational structures, norms, and resources in shaping project outcomes (DiMaggio & Powell, 1983). In this study, institutional support—manifested through the provision of resources, supportive policies, and technical assistance—emerged as a critical determinant of both project communication and performance. These findings align with Owan et al. (2024), who assert that robust institutional frameworks enable project teams to navigate challenges effectively and enhance operational efficiency. Specifically, the availability of resources equips teams with the tools required to execute tasks, while supportive policies mitigate bureaucratic hurdles, fostering an environment conducive to collaboration. In the context of food estate development, which involves cross-sectoral collaboration and large-scale operations, institutional support is indispensable for ensuring seamless coordination and execution.

Transformational leadership theory (Bass, 1985) highlights the role of leaders in inspiring and guiding teams toward shared objectives. This study found that leadership significantly influences project communication, which in turn mediates its impact on project performance. This aligns with Ali & Rasheed (2021), who emphasize that transformational leaders enhance outcomes by fostering clear, motivational communication. Leaders who articulate a compelling vision and make informed decisions in challenging situations create an environment that encourages accountability and collaboration (Ahmed & Anantatmula, 2017). Additionally, McKinsey (2017) identifies effective leadership as a catalyst for alignment and focus, a critical factor in complex initiatives such as food estate projects. By promoting a culture of open communication and shared purpose, transformational leaders bridge the gap between strategy and execution, ensuring that institutional directives are operationalized effectively. However, one limitation to consider is the variability in leadership styles and their adaptability to different project phases, which warrants further exploration to better tailor leadership strategies to specific challenges in food estate development. Stakeholder theory (Freeman, 1984) posits that active stakeholder involvement is essential for project success. However, this study uncovered no direct relationship between stakeholder engagement and project communication, a finding that diverges from prior research by Alqaisi (2018) and Olander (2007). These earlier studies highlighted the importance of stakeholder participation in enhancing communication and outcomes. The discrepancy observed in this study may be attributed to the diverse and complex stakeholder landscape in food estate projects, where conflicting interests can dilute engagement efforts. Nonetheless, stakeholder theory remains relevant, as indicators such as active participation, consideration of stakeholder needs, and effective communication are pivotal in building trust and reducing resistance. While the direct impact on communication may be less pronounced, the indirect benefits of stakeholder engagement in fostering alignment and mitigating conflicts cannot be overlooked.

Project communication emerged as a critical mediating factor, underscoring its role as highlighted in project management literature. This study corroborates findings by Nyandongo & Davids (2020) and Wang & Hu (2012), which emphasize that clear, timely communication minimizes misunderstandings, facilitates conflict resolution, and aligns team efforts. Effective communication ensures that institutional support and leadership initiatives are translated into actionable strategies, bridging gaps between planning and execution. In food estate projects, characterized by their complexity and the involvement of multiple stakeholders, robust communication mechanisms are vital for ensuring cohesion and alignment. However, the challenge of maintaining consistent communication across diverse and geographically dispersed teams highlights the need for adopting advanced communication technologies and establishing standardized communication protocols. The indicators of project performance examined in this study—including adherence to schedules, quality standards, efficient budget management, stakeholder satisfaction, and regional impact—align with established metrics for evaluating project success (Liphadzi et al., 2015). These dimensions highlight the multidimensional nature of project performance, encompassing both tangible outcomes (e.g., time, cost, and quality) and broader societal impacts. Research by San & Guo (2023) further emphasizes the significance of these factors in ensuring the long-term sustainability and stakeholder support of large-scale development initiatives. By integrating these dimensions, this study provides a holistic framework for assessing the success of food estate projects.

The results of this study contribute significantly to both theory and practice in the domain of project management, particularly within the context of food estate development. Theoretically, the integration of stakeholder theory, transformational leadership theory, and institutional theory offers a robust framework for understanding the interplay between institutional structures, leadership dynamics, communication, and stakeholder engagement in complex projects. This synthesis advances existing knowledge by demonstrating how these theories operate synergistically to influence project outcomes. Practically, the findings provide actionable insights for policymakers, project managers, and other stakeholders involved in food estate initiatives. By emphasizing the critical roles of institutional support, visionary leadership, effective communication, and stakeholder collaboration, this study highlights the strategies necessary to optimize project performance. These insights are particularly relevant for addressing the unique challenges of large-scale, cross-sectoral projects, ensuring not only operational success but also sustainable societal impact in food estate development.

7. Conclusion

This study reveals that leadership has a significant impact on the performance of food estate projects in Indonesia, particularly through its role in influencing project communication, which acts as the main mediator between leadership and project performance. While stakeholder engagement does not show a direct significant relationship with project communication, its role in building trust, reducing resistance, and ensuring stakeholder needs are met remains crucial for the overall success of the project. Institutional support contributes directly to project performance by providing resources, supportive policies, and technical assistance, which also strengthens the effectiveness of project communication as a mechanism to integrate these supporting elements. Project communication plays a crucial mediating role, bridging the relationship between leadership, stakeholder engagement, institutional support, and project performance, ensuring that the vision, resources, and needs of all involved parties are effectively realized to achieve successful development outcomes. These findings emphasize the importance of collaboration between transformational leadership, effective communication, and institutional support in enhancing the performance of food estate projects.

From a managerial perspective, the study underscores the importance of fostering strong leadership that not only guides but also communicates effectively with the team and stakeholders. Managers should prioritize clear communication channels, establish collaborative frameworks, and ensure the alignment of resources and policies with project goals. Additionally, understanding and addressing the needs and expectations of stakeholders can enhance project outcomes, even if their direct influence on communication is limited. Ensuring institutional support, in terms of both resources and policy, is also crucial for overcoming barriers and facilitating project success. However, this study has some limitations. First, the research was conducted in a specific context, focusing on food estate projects in Indonesia, which may limit the generalizability of the findings to other countries or industries. Second, the study relied on self-reported data, which may introduce bias due to respondents' subjective views or social desirability effects. Third, the analysis focused primarily on direct and mediating relationships between variables, without considering potential moderating factors that might influence these relationships, such as cultural or organizational dynamics. Future research should explore the role of cultural and contextual factors in the dynamics of leadership, communication, and institutional support within large-scale development projects. Studies could also examine the moderating effects of organizational culture, governance structures, and external environmental factors on the relationships identified in this study. Further research might also investigate the long-term impact of food estate projects on local communities and the environment, providing a more comprehensive understanding of their sustainability and broader impact. Moreover, qualitative research methods could offer deeper insights into the complexities of stakeholder engagement and communication processes, complementing the findings of this quantitative study.

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