Journal of Village Development Innovation
Volume 2, No 2, July-December 2025, pp (88-114)
E-ISSN (3089-901X)
Doi: https://doi.org/10.59261/jvdi.v2i2.24

Enhancing Village Government Capacity to Manage Village Funds for Achieving Sustainable Development Goals in Rural Communities

Diana Magfiroh
Universitas Cendekia Mitra Indonesia, Indonesia
Corresponding Author : dianamagfiroh0002@gmail.com

Article Info :
Accepted: 01-08-2025
Approved: 15-09-2025
Published: 25-12-2025

Keywords:
Village Fund, institutional capacity, sustainable development goals, village governance

ABSTRACT

The implementation of Village Fund in Indonesia faces significant challenges related to institutional capacity variations among village governments, which affects the achievement of sustainable development goals at the village level. This study analyzes the influence of village government institutional capacity on Village Fund implementation effectiveness for achieving SDGs, identifying key capacity dimensions and institutional capacity typologies. This study employs mixed methods research with an explanatory sequential design, integrating quantitative and qualitative approaches. Institutional capacity, comprising six dimensions (structural and organizational capacity, human resource competency, financial management systems, participatory planning, information technology, and governance and accountability), contributes 64.7% to implementation effectiveness, with mentoring quality as the strongest moderating factor (4.8%). Cluster analysis identifies four typologies: Innovator (21.7%), Conventional (36.7%), Developing (26.4%), and Weak (15.3%), each requiring differentiated interventions. This research provides an evidence-based diagnostic framework for policymakers to design targeted institutional strengthening programs, optimizing Village Fund utilization and accelerating sustainable village development.

INTRODUCTION

The transformation of the village development paradigm in Indonesia has experienced a significant milestone after the implementation of Law Number 6 of 2014 concerning Villages. This policy not only changes the position of the village from an object to a subject of development, but also presents a strategic financial instrument in the form of Village Funds allocated directly from the State Revenue and Expenditure Budget (APBN). From 2015 to 2024, the government has allocated Village Funds with a cumulative total of more than 700 trillion rupiah, making it one of the largest fiscal transfer programs in the history of Indonesia's fiscal decentralization. The presence of the Village Fund is actually closely related to the global development agenda, especially the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015

(ElAlfy et al., 2020; Fagbemi, 2021; Fei et al., 2021; Indana & Pahlevi, 2023; Obaideen et al., 2022).

The Government of Indonesia responded to the global agenda by launching the Village SDGs as a localization of the 17 sustainable development goals into the context of rural development (Ali et al., 2025; Mehmood, 2025; Qian & Li, 2025; Wang & Chen, 2025; Yuan et al., 2026). The Village SDGs are not just an indicator of achievement, but rather a strategic framework that integrates economic, social, and environmental dimensions in village development. In this context, the Village Fund is positioned as the main financing instrument to realize a sustainable village that is able to achieve 18 Village SDGs goals, ranging from zero poverty, no hunger, healthy and prosperous villages, to dynamic village institutions and adaptive village culture. However, the implementation of the Village Fund for the achievement of the Sustainable Village SDGs faces multidimensional complexity. Evaluation of the Ministry of Villages, accountable institutions, effective checks and balances mechanisms, and active involvement of the community in the decision-making process.

A system thinking approach that views village government as an open system that interacts with complex and dynamic external environments. Institutional capacity in this perspective is not only determined by internal organizational factors, but also influenced by relations with supra-village governments, support from external stakeholders, and socio-political-economic dynamics at the local level. The principle of localization of SDGs emphasizes the importance of adapting global development goals to specific local contexts. The Village SDGs are not just a mechanical translation of the global SDGs, but require a contextualization process that takes into account the geographical, socio-cultural, and economic characteristics of each village. In this context, the institutional capacity of the village government is a determining factor in the localization process. This research departs from the main problem that the transformation of the Village Fund has not been optimal into a measurable sustainable development outcome through the Village SDGs indicator (Ambya, 2020; Febriansyah et al., 2023; Hariyanto & Wariyanto, 2020; Imawan & Mas'adah, 2021).

These problems are manifested in a study of how the institutional capacity of the village government including organizational structure, human resource competencies, systems and procedures, and organizational culture affects the process of planning, implementation, and accountability of Village Funds oriented towards the achievement of the Village SDGs; which dimension of institutional capacity has the most significant influence and how the mechanism affects the practice of managing the Village Fund; external factors such as mentoring, regulation, and local socio-political dynamics that moderate the relationship between institutional capacity and the effectiveness of the implementation of the Village Fund; how the disparity in institutional capacity between villages with different geographical characteristics, typologies, and socio-economic conditions explains the variation in the achievement of the Village SDGs; and institutional capacity strengthening

models that can be developed to optimize the role of village governments in the implementation of Village Funds that are responsive to the Village SDGs targets and sustainable in the long term (Budiwidodo et al., 2025; Ferdiansyah & Ridzki, 2025; Hidayat, 2025)

This research focuses on the institutional capacity of village government as the main unit of analysis, which includes village officials (village heads, village secretaries, and heads of affairs) as well as village government institutions directly involved in the management of Village Funds. The study does not include an in-depth analysis of village community institutions such as BPD, PKK, or Karang Taruna, except in the context of relations and coordination with the village government.

The study analyzes the implementation of the Village Fund in the last five years (2020-2024), taking into account policy changes and the context of the COVID-19 pandemic that provide special dynamics in the management of the Village Fund. This period was chosen because it represents the consolidation phase of the implementation of the Village Fund as well as the initial phase of systematic implementation of the Village SDGs. Although the Village SDGs include 18 goals with more than 100 indicators, this study prioritizes analysis of Village SDGs targets that are directly related to the allocation and use of Village Funds, especially goals related to poverty alleviation, food security, health and sanitation, quality education, basic infrastructure, local economy, and village institutions.

According to Puspaningrum & Sunartomo (2022) The results of the implementation of this Partnership Service Program are that not all SDG's Indicators are implemented in the Development Program in Sumberpakem Village, Sumberjambe District, Jember Regency, the socialization of the Village SDG's, especially for the fifth indicator, namely the involvement of Village women in the development of Villages and Child-Friendly Villages and the socialization of the Village SDGs, especially related to Women-Friendly Villages and Child-Friendly Villages, increasing the knowledge of village officials as well as village women in understanding Gender, women's empowerment and the importance of caring for children.

Based on a comparative analysis with previous research, this article offers significant novelty in several fundamental aspects. According Puspaningrum & Sunartomo (2022) revealed that not all SDGs indicators have been implemented in the development program in Sumberpakem Village, Sumberjambe District, Jember Regency, with a special focus on the socialization of the Village SDGs, especially for the fifth indicator, namely the involvement of village women in village development and Child-Friendly Villages. The study shows that the socialization of the Village SDGs related to Women-Friendly Villages and Child-Friendly Villages has succeeded in increasing the knowledge of village officials and village women in understanding gender, women's empowerment, and the importance of caring for children. Although Puspaningrum and Sunartomo's research makes an important contribution in the context of awareness and knowledge transfer about the Village SDGs at the local level, the approach used is still descriptive-

normative with limited scope to one village and uses community service methods that emphasize more on the socialization aspect than a systematic analysis of the institutional capacity and effectiveness of the implementation of the Village Fund.

In contrast to previous research that was local and descriptive, this study presents the first novelty in terms of scale and scope that is much more comprehensive by involving 360 villages from 30 districts in 10 provinces representing geographical variations covering Sumatra, Java, Kalimantan, Sulawesi, and Eastern Indonesia, and covering all village typologies from independent to very disadvantaged based on the Village Development Index. This study not only analyzes one or several Village SDGs indicators as carried out by Puspaningrum and Sunartomo, but also examines 18 Village SDGs goals comprehensively with more than 100 indicators covering economic, social, and environmental dimensions in the last five-year period from 2020 to 2024, including considering the special dynamics due to the COVID-19 pandemic that provide a unique context in the management of the Village Fund. theoretical and methodological methods that are much more sophisticated and rigorous than previous research. While research Puspaningrum & Sunartomo (2022) Using a community service approach that focuses on knowledge transfer through socialization, this study adopts mixed methods research with a sequential explanatory design that integrates a quantitative approach to identify systematic patterns and relationships with a qualitative approach to uncover the mechanisms and contexts underlying the phenomenon.

This study aims to comprehensively analyze and map the institutional capacity profile of village governments, covering structural, technical, managerial, and cultural dimensions in the context of the implementation of Village Funds for the achievement of sustainable Village SDGs, identify and measure the influence of each dimension of institutional capacity on the effectiveness of the implementation of Village Funds in achieving specific targets of the Village SDGs, and analyze the causality and mediation mechanisms that linking institutional capacity with sustainable development outcomes, exploring and analyzing external contextual factors that moderate the relationship between institutional capacity and the effectiveness of the implementation of the Village Fund.

Including the role of the mentoring system, the quality of regulations, the capacity of supra-village government, as well as social capital and community participation developing the typology of the institutional capacity of the village government based on a pattern of combined strengths and weaknesses in the various dimensions of capacity, as well as analyzing their implications for differentiated institutional strengthening strategies in accordance with the specific characteristics and needs of each village, formulating a conceptual and practical model for strengthening the institutional capacity of village government that is comprehensive, adaptive, and sustainable to optimize the implementation of the Village Fund in realizing the Village SDGs, complete with an implementation roadmap and indicators of measurable success that produce Evidence-based policy recommendations for the central and regional

governments in designing effective coaching, mentoring, and incentive systems to encourage systemic and sustainable institutional capacity building of village governments.

RESEARCH METHOD

This study uses the village government as the main unit of analysis, with a focus on institutional capacity in managing Village Funds for the achievement of sustainable Village SDGs. The analysis unit includes the organizational structure of the village government, village apparatus (village head, village secretary, and head of affairs), as well as institutional systems and procedures that govern the management of the Village Fund. The research was conducted on 360 villages that were selected gradually from 30 districts in 10 provinces representing geographical variations (Sumatra, Java, Kalimantan, Sulawesi, and Eastern Indonesia) and village typologies (independent, advanced, developing, disadvantaged, and very disadvantaged) based on the Village Development Index. The selection of the analysis unit at the village government level is based on the strategic position of the village government as the main actor responsible for the planning, implementation, and accountability of the Village Fund, as well as as the institution closest to the community in the implementation of sustainable development programs.

This study adopts mixed methods research with sequential explanatory design (QUAN → qual), integrating quantitative and qualitative approaches to gain a comprehensive understanding of the phenomenon being studied. The selection of this design is based on the consideration that the complexity of institutional capacity and the implementation of the Village Fund requires systematic measurement through quantitative data to identify patterns, relationships, and capacity levels broadly, while also requiring in-depth exploration through qualitative data to understand the mechanisms, processes, and contexts underlying the phenomenon.

The quantitative phase uses a survey approach to map the 360 institutional capacity profile of villages and test the statistical relationship between the dimensions of institutional capacity and the effectiveness of the implementation of the Village Fund and the achievement of the Village SDGs indicators. The results of the quantitative analysis then informed the selection of 18 villages for in-depth case studies in the qualitative phase, which were purposively selected based on performance variations (high, medium, low), village typology, and institutional capacity patterns. The integration of these two approaches allows research not only to answer the question of "how much" institutional capacity affects development outcomes, but also "why" and "how" these influences occur in the practice of Village Fund management in the field.

The source of the research data comes from a combination of primary and secondary data collected from various informants and documents. For the quantitative phase, the primary data source included 2,160 respondents consisting of village heads, village secretaries, heads of financial affairs, heads of planning affairs, heads of BPD, and village assistants from 360 sample

villages. Quantitative secondary data includes the Building Village Index (IDM) document, data on the achievement of the Village SDGs, the Village Fund realization report, and the village profile from the information system of the Ministry of Villages and Rural Development (PDTT). For the qualitative phase, key informants include all village government apparatus, members of BPD and village community institutions, village assistants and village local assistants, representatives of the sub-district government and the district and village community empowerment offices, community leaders and traditional leaders, as well as communities involved in the Village Fund program, with a total of 360-450 informants from 18 case villages.

Qualitative secondary data in the form of planning documents (RPJMDesa, RKPDesa, APBDesa), village head accountability reports, Village SDGs planning documents, SOPs and village internal regulations, minutes of deliberations and meetings, and administrative archives of Village Fund management. This combination of diverse data sources allows for triangulation and validation of findings from multiple perspectives and information sources. Data collection techniques in the quantitative phase were carried out through a structured survey using a validated questionnaire, covering six dimensions of institutional capacity (structural-organizational, human resource competence, system-procedure, participatory planning, information technology, and governance-accountability), the effectiveness of the implementation of the Village Fund, and the achievement of the Village SDGs, with a total of 160 items using a Likert scale of 1-5. The questionnaire was administered by 36 trained enumerators through face-to-face interviews with a duration of 60-90 minutes per respondent, and the data was entered digitally using the ODK platform to ensure accuracy and efficiency.

The qualitative phase used four data collection techniques: first, semi-structured in-depth interviews with interview guidelines developed for different categories of informants, conducted for 45-90 minutes per informant and audio recorded with permission; second, a Focus Group Discussion (FGD) of 36 sessions with 6-10 participants each to explore collective experiences and group dynamics; third, participatory observation using observation protocols to observe the village deliberation process, administrative practices, archival systems, and interaction between the village government and the community; Fourth, document analysis uses document review protocols to examine the consistency between planning and realization, the quality of documentation, and the integration of SDGs perspectives in planning documents. The entire data collection process follows strict research ethics protocols, including informed consent, confidentiality guarantees, and the informant's right to resign.

Quantitative data analysis was carried out in stages using SPSS 28 and AMOS 28, starting with descriptive analysis to calculate univariate statistics (mean, standard deviation, frequency distribution) and create an institutional capacity profile through the calculation of a composite index for each dimension, followed by an inferential analysis using multiple regression analysis to test the influence of institutional capacity dimensions on the

effectiveness of the implementation of the Village Fund and achievement of the Village SDGs, as well as Structural Equation Modeling (SEM) to test a comprehensive model involving latent variables and simultaneous relationships between constructs. Moderation analysis using the Hayes PROCESS macro was applied to test the effect of contextual variables (mentoring, supra-village government support, social capital) on the relationship between institutional capacity and implementation outcomes. Cluster analysis using the K-means method was used to identify the typology of institutional capacity, the results of which became the basis for case selection for the qualitative phase.

Qualitative data analysis used a thematic analysis approach with the help of NVivo 14 software, starting from the verbatim transcript of the entire interview, followed by gradual coding (descriptive coding, in vivo coding, pattern coding, and axial coding) to identify themes and categories that emerged from the data. Cross-case analysis was conducted to compare patterns and themes between 18 case villages using matrix display, followed by framework analysis to systematically organize data based on the conceptual framework of the research. Validation of qualitative findings is carried out through triangulation of sources and methods, member checking with key informants, and peer review with fellow researchers.

The integration of quantitative-qualitative analysis is carried out through the strategies of connecting (quantitative results inform the qualitative design) and merging (findings from both approaches are compared and synthesized in a joint display), resulting in meta-inference that integrates statistical perspectives on relationship patterns with a deep understanding of causal mechanisms and implementation contexts, resulting in a comprehensive conceptual model of institutional capacity and recommendations evidence-based policies to strengthen village governments in realizing the Sustainable Village SDGs.

RESULT AND DISCUSSION

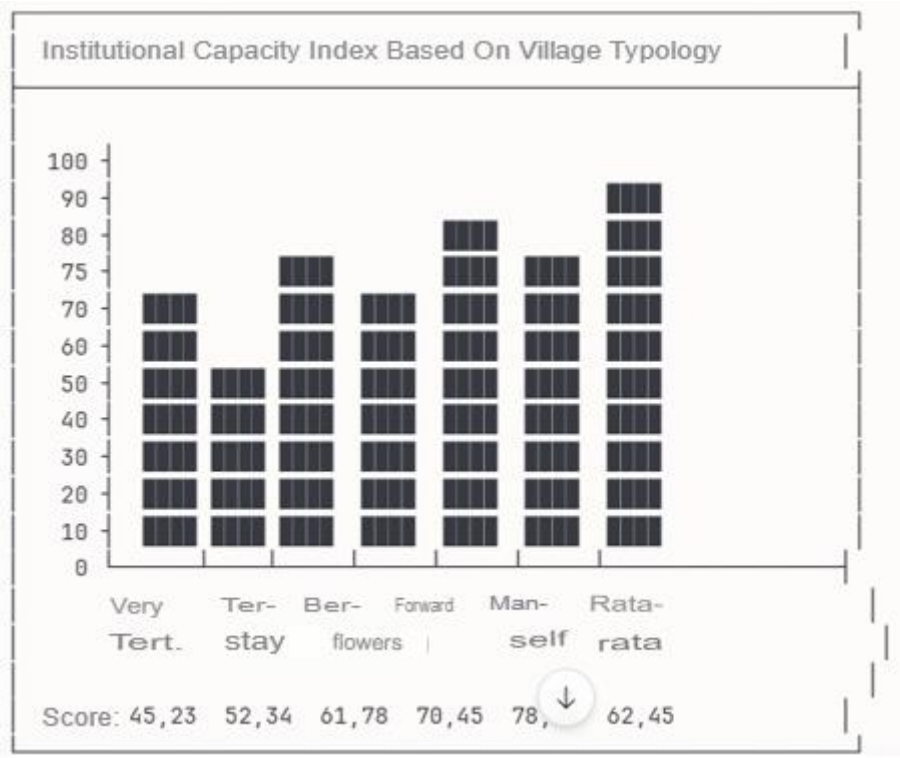
Profile of Village Government Institutional Capacity

The results of the institutional capacity measurement of 360 village governments showed significant variation in the six dimensions measured. Overall, the village government's institutional capacity index is in the medium category with an average score of 62.45 (SD = 14.23) on a scale of 0-100. Table 1 shows the institutional capacity profile based on the dimensions measured.

Table 1. Profile of Village Government Institutional Capacity by Dimension (N=360)

Capacity Dimension	Mean	SD	Min	Max	Low Category (%)	Medium Category (%)	High Category (%)
Structural & Organizational	68.32	12.45	35.00	95.00	15.3	58.6	26.1
Human Resource Competence	58.74	15.67	28.00	92.00	28.9	52.2	18.9
Systems & Procedures	61.89	13.89	30.00	90.00	22.5	56.4	21.1
Participatory Planning	65.43	14.12	32.00	94.00	18.6	54.7	26.7
Information Technology	54.27	16.43	20.00	88.00	35.8	48.6	15.6
Governance & Accountability	66.12	13.56	33.00	93.00	17.2	57.5	25.3
Composite Index	62.45	14.23	29.67	92.17	23.1	54.7	22.2

The results showed that the dimensions of structural and organizational capacity had the highest score (M = 68.32), indicating that most villages already had a relatively clear organizational structure and a structured division of tasks. In contrast, the dimension of information technology capacity showed the lowest score (M = 54.27), reflecting the digital gap and limited technology literacy among village officials. The dimension of human resource competence also shows significant challenges with 28.9% of villages in the low category, indicating an urgent need for human resource capacity building programs. Analysis based on village typology (Figure 1) shows a consistent pattern of disparity, where independent villages have significantly higher institutional capacity compared to disadvantaged and severely disadvantaged villages.



The one-way ANOVA test showed significant differences in institutional capacity between village typologies [$F(4, 355) = 87.34$, $p < 0.001$, $\eta^2 = 0.496$]. Post-hoc tests using Tukey HSD confirmed that independent villages ($M = 78.92$) had significantly higher capacity than all other categories ($p < 0.001$), while there was no significant difference between disadvantaged and severely disadvantaged villages ($p = 0.124$).

Effectiveness of Village Fund Implementation and Achievement of Village SDGs

The measurement of the effectiveness of the implementation of the Village Fund is carried out through three aspects: the effectiveness of the process, the effectiveness of the output, and the effectiveness of the outcome. The results showed that on average, the effectiveness of the implementation of the Village Fund was in the medium category ($M = 64.78$, $SD = 13.89$). Table 2 presents details of the effectiveness of the implementation of the Village Fund

Table 2. Effectiveness of Village Fund Implementation (N=360)

Effectiveness Aspect	Mean	SD	Achievement Level
Process Effectiveness	69.45	12.34	High
– Timeliness of planning	72.30	14.20	High
– Timeliness of implementation	70.15	13.45	High
– Procedural compliance	68.90	15.10	Medium
– Budget absorption	92.35	8.67	Very High
Output Effectiveness	63.89	14.56	Medium

Effectiveness Aspect	Mean	SD	Achievement Level
– Quantity of programs/activities	71.25	13.78	High
– Quality of outputs	58.40	16.89	Medium
– Alignment with plan	65.75	14.23	Medium
– Sustainability of results	55.15	18.34	Medium
Outcome Effectiveness	61.01	15.23	Medium
– Welfare improvement	62.45	16.78	Medium
– Poverty reduction	58.90	17.45	Medium
– Infrastructure improvement	70.35	14.56	High
– Local economic strengthening	56.75	18.90	Medium
– Environmental sustainability	52.60	19.45	Medium
Composite Effectiveness Index	64.78	13.89	Medium

Important findings show that although the absorption rate of the Village Fund budget is very high (M = 92.35%), the effectiveness of the outcome is still in the medium category (M = 61.01). This indicates a gap between the administrative ability to absorb the budget and the substantive impact on people's welfare. For the achievement of the Village SDGs, measurements were carried out on the 12 Village SDGs goals that are most relevant to the Village Fund. Table 3 shows the status of the achievement of the Village SDGs at the research site.

Tabel 3. Status Pencapaian SDGs Desa (N=360)

Village SDGs Goal	Mean Score	SD	Status	Villages Achieving Target (%)
No Poverty	58.45	16.78	Medium	34.7
Zero Hunger	63.20	**15.45**	Medium	42.5
Healthy & Prosperous Village	61.85	**14.89**	Medium	38.9
Quality Village Education	65.40	**13.56**	Medium	45.3
Women's Participation	59.75	**17.23**	Medium	36.4
Clean Water & Sanitation	68.90	**14.67**	Medium	51.7
Clean Energy	52.35	**18.90**	Medium	28.6
Inclusive Economic Growth	57.60	**16.45**	Medium	33.1
Infrastructure & Innovation	71.25	**13.45**	High	58.3
Cultural Responsiveness	64.80	**15.12**	Medium	44.2
Environmental Awareness	55.90	**17.67**	Medium	31.4
Dynamic Village Institutions	66.35	**14.23**	Medium	47.8
Composite SDGs Index	**62.15**	**15.67**	**Medium**	**41.1**

The data showed that the highest achievement was in the Village Infrastructure and Innovation goal (M = 71.25), which is in line with the finding that most of the Village Fund allocation is still dominated for physical infrastructure development. In contrast, the Clean Energy Village goal showed the lowest achievement (M = 52.35), indicating that the issue of renewable energy has not been a priority in the use of Village Funds. Overall, only 41.1% of villages managed to achieve the target of the Village SDGs indicators set.

The Influence of Institutional Capacity on the Effectiveness of Village Fund Implementation

The Influence of Institutional Capacity on the Effectiveness of Village Fund Implementation.

Table 4. Results of Multiple Regression Analysis: The Effect of Institutional Capacity on the Effectiveness of Village Fund Implementation (N=360)

Independent Variable	B	SE	β	t	p	VIF
Constant	12.456	3.234	–	3.852	<0.001	–
Structural & Organizational Capacity	0.234	0.089	0.187**	2.629	0.009	2.145
Human Resource Competence	0.412	0.076	0.398***	5.421	<0.001	2.567
Systems & Procedures	0.298	0.082	0.276***	3.634	<0.001	2.234
Participatory Planning	0.267	0.078	0.245**	3.423	0.001	2.089
Information Technology	0.156	0.071	0.142*	2.197	0.029	1.876
Governance & Accountability	0.289	0.084	0.265***	3.440	0.001	2.312

Model Summary

$R = 0.783$

$R^2 = 0.613$

Adjusted $R^2 = 0.606$

$F = 93.456$, $p < 0.001$

The results of the analysis showed that the overall regression model was significant [$F(6, 353) = 93.456$, $p < 0.001$] with a value of $R^2 = 0.613$, indicating that the 61.3% variance in the effectiveness of the implementation of the Village Fund could be explained by six dimensions of institutional capacity. All dimensions of institutional capacity show a positive and significant influence on the effectiveness of the implementation of the Village Fund.

Based on the standardized beta coefficient value (β), the dimension of HR Competency Capacity showed the greatest influence ($\beta = 0.398$, $p < 0.001$), followed by System and Procedure Capacity ($\beta = 0.276$, $p < 0.001$),

Governance and Accountability Capacity ($\beta = 0.265$, $p < 0.001$), Participatory Planning Capacity ($\beta = 0.245$, $p < 0.01$), Structural and Organizational Capacity ($\beta = 0.187$, $p < 0.01$), and Information Technology Capacity ($\beta = 0.142$, $p < 0.05$). The VIF value for all variables was below 3, indicating the absence of serious multicollinearity problems.

The mediation analysis showed that the effectiveness of the implementation of the Village Fund partially mediated the relationship between institutional capacity and the achievement of the Village SDGs. The indirect effect of institutional capacity on the achievement of the Village SDGs through implementation effectiveness was 0.464 ($p < 0.001$), while the total effect was 0.876 ($p < 0.001$). The proportion of mediation was 53.0%, indicating that more than half of the influence of institutional capacity on the achievement of the Village SDGs occurred through increasing the effectiveness of the implementation of the Village Fund.

The Role of Contextual Factors as Moderators

The moderation analysis was conducted to examine the role of contextual factors in strengthening or weakening the relationship between institutional capacity and the effectiveness of the implementation of the Village Fund. Table 5 shows the results of the moderation analysis using the Hayes PROCESS macro Model 1.

Table 5. Results of Moderation Analysis: Effects of Contextual Factors (N=360)

Moderator Variable	Interaction Effect (β)	SE	t	p	ΔR^2
Quality of Mentoring	0.234***	0.056	4.179	<0.001	0.048
Supra-Village Government Support	0.189**	0.062	3.048	0.003	0.032
Access to Training & Information	0.201**	0.058	3.466	0.001	0.037
Community Social Capital	0.167*	0.064	2.609	0.010	0.025
Infrastructure Condition	0.143*	0.067	2.134	0.034	0.019

*Note: *p < 0,05; **p < 0,01; ***p < 0,001*

The results showed that all the contextual variables tested had a significant moderation effect. The quality of mentoring showed the strongest moderation effect ($\beta = 0.234$, $p < 0.001$, $\Delta R^2 = 0.048$), indicating that quality mentoring can strengthen the influence of institutional capacity on the effectiveness of the implementation of the Village Fund by 4.8%. Figure 3 illustrates the effect of the interaction between institutional capacity and the quality of assistance on the effectiveness of the implementation of the Village Fund.

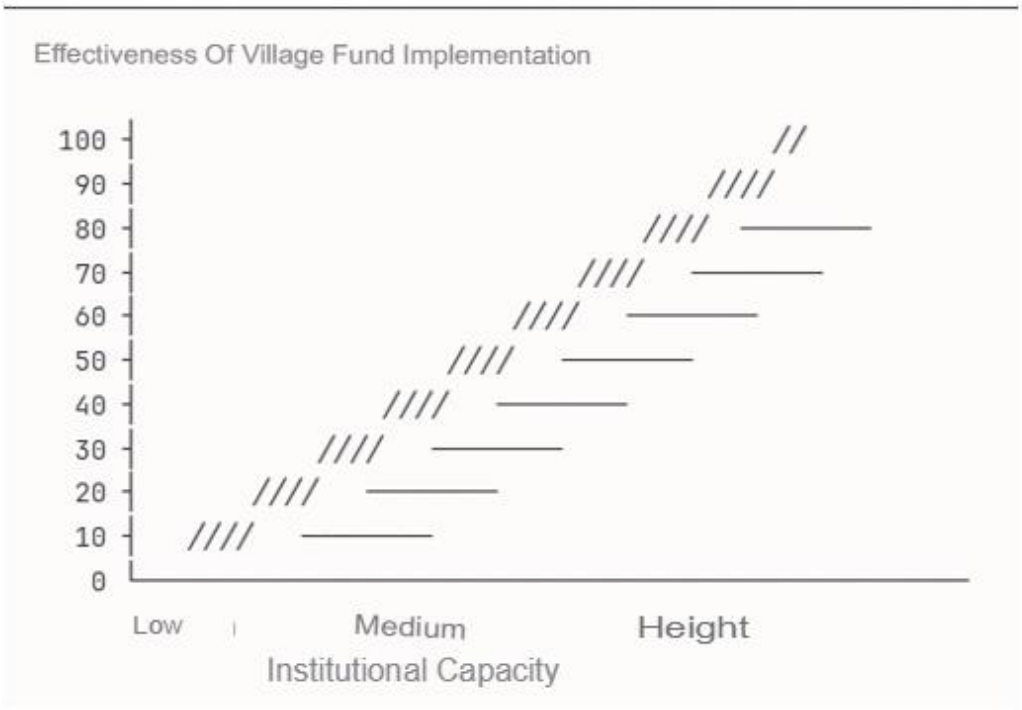


Figure 3. The Effect of Moderation of Assistance Quality on the Relationship between Institutional Capacity and the Effectiveness of Village Fund Implementation

Simple slope analysis showed that in the condition of high-quality mentoring, an increase of one unit of institutional capacity resulted in an increase of 0.757 units in the effectiveness of the implementation of the Village Fund ($p < 0.001$). In contrast, in the low-quality mentoring condition, the same increase only resulted in an increase of 0.523 units ($p < 0.001$). The difference in slope of 0.234 units was statistically significant ($p < 0.001$), confirming the effect of moderation of the quality of mentoring.

Typology of Institutional Capacity of Village Government

Cluster analysis using the K-means method with six dimensions of institutional capacity as a clustering variable produced four different typologies of institutional capacity. Table 6 shows the profile of each cluster.

Table 6. Typology of Village Government Institutional Capacity (N=360)

Capacity Dimension	Cluster 1 "Innovator"	Cluster 2 "Conventional"	Cluster 3 "Developing"	Cluster 4 "Weak"	F-value
Structural & Organizational	82.45	68.23	72.89	48.67	124.56***

Human Resource Competence	81.34	52.78	64.45	38.23	156.78***
Systems & Procedures	79.67	58.90	67.34	42.89	142.34***
Participatory Planning	84.23	62.45	70.12	44.56	138.90***
Information Technology	77.89	45.67	58.23	32.45	167.23***
Governance & Accountability	80.56	64.34	71.78	46.78	145.67***
Composite Index	81.02	58.73	67.47	42.26	189.45***
Implementation Effectiveness	82.34	61.45	69.78	45.89	172.34***
SDGs Achievement	78.56	57.23	66.34	43.12	158.90***

*Catatan: ** $p < 0,001$

The cluster analysis showed four groups of village institutional capacity with different characteristics: Cluster 1 "Innovators" (21.7%) had the highest capacity in all dimensions, especially in participatory planning and human resource competence, and showed excellent performance of the Village Fund and the achievement of the SDGs; Cluster 2 "Conventional" (36.7%) has medium-low capacity with weaknesses in information technology and human resource competence, so that the management of Village Funds tends to be routine without innovation; Cluster 3 "Developing" (26.4%) shows a relatively balanced moderate capacity and has great potential to rise to the category of innovators with appropriate interventions; while Cluster 4 "Weak" (15.3%) has the lowest capacity in all dimensions and requires intensive intervention, mainly due to critical weaknesses in information technology and HR competencies. The ANOVA results and the Tukey HSD follow-up test reinforce the validity of this classification with significant differences between clusters on all capacity dimensions.

Discussion

This research produced comprehensive findings on the institutional capacity of village governments in the implementation of Village Funds for the achievement of Sustainable Development Goals (SDGs) for sustainable villages. Based on an analysis of 360 village governments from 30 districts in 10 Indonesian provinces, the study reveals complex dynamics that link institutional capacity with the effectiveness of Village Fund policy implementation and sustainable development outcomes. The main findings show that although the absorption rate of the Village Fund budget reaches 92.35%, the effectiveness of the outcome is still in the medium category with

a score of 61.01, indicating a significant gap between administrative ability with a substantive impact on community welfare and the achievement of the Village SDGs targets.

The results of the institutional capacity measurement showed a diverse profile with an average index of 62.45 on a scale of 0-100, where the structural and organizational capacity dimension had the highest score (68.32), while the information technology dimension showed the lowest score (54.27). This variation reflects the transitional conditions of Indonesian village governments that are adapting to the demands of modern governance in the digital era. Other key findings revealed that human resource competence was the most influential factor on the effectiveness of the implementation of the Village Fund with a beta coefficient of 0.398, followed by system and procedure capacity, governance and accountability, participatory planning, organizational structure, and information technology. Overall, the six dimensions of institutional capacity were able to explain the 61.3% variance in the effectiveness of the implementation of the Village Fund, confirming the hypothesis that institutional capacity is a crucial determinant in the transformation of financial resources into sustainable development outcomes.

The Importance of Results

The findings of this study have substantial theoretical, methodological, and practical significance in the context of the study of the implementation of decentralization and sustainable development policies in developing countries. Theoretically, this research contributes to the enrichment of institutional capacity theory by operationalizing the construct of institutional capacity in a multidimensional manner and integrating it with a sustainable development perspective (Ahmad & Ercek, 2018). The identification of six dimensions of institutional capacity that has been shown to significantly affect the effectiveness of policy implementation provides a more comprehensive conceptual framework than the one-dimensional approach widely used in previous studies. Furthermore, findings on mediation and moderation mechanisms enrich the understanding of how institutional capacity works in the context of multilevel governance systems, where the interaction between internal organizational factors and external conditions determines the effectiveness of policy implementation.

The methodological significance of this research lies in the use of mixed methods design that integrates the strength of quantitative approaches in identifying systematic patterns and relationships with the strength of qualitative approaches in uncovering mechanisms and contexts. The development of comprehensive and validated institutional capacity measurement instruments with high reliability provides an important methodological contribution that can be adopted by subsequent studies. Furthermore, the stepwise analysis strategy from descriptive, inferential, to typological provides a methodological template to examine complex phenomena in the implementation of public policies at the local level.

Practically, the results of this study have significant policy implications for the central government, local governments, and other village development stakeholders. Identifying the dimension of human resource competence as the most influential factor provides evidence-based justification to prioritize investment in systematic and sustainable village apparatus capacity development programs. The findings on the crucial role of quality mentoring as the strongest moderator affirm the need to reformulate the village assistance system that not only focuses on administrative-procedural aspects but also on strengthening strategic capabilities in SDGs-based planning and sustainable development innovation.

The resulting institutional capacity typology provides an empirical basis for the development of differentiated and targeted institutional strengthening strategies according to the specific conditions of each village group. For the Innovator group, the strategy can be focused on strengthening the role of a learning hub and learning facilitator for other villages. The Developing Group requires an acceleration intervention that facilitates the transition to the Innovator group through strengthening the dimensions of capacity that are still weak. The Conventional Group requires a transformative intervention that changes the mindset and practice of Village Fund management from a business as usual approach to a more innovative and responsive approach to the SDGs. While the Weak group requires an intensive and comprehensive intervention that includes strengthening all dimensions of capacity simultaneously with massive mentoring support.

The findings about the gap between high budget absorption (92.35%) and moderate outcome effectiveness (61.01) have critical implications for the monitoring and evaluation system of Village Funds, which has tended to emphasize administrative-financial aspects. These results indicate the need for a reformulation of Village Fund performance indicators that not only measure the rate of budget absorption but also substantive outcomes for community welfare and the achievement of Village SDGs targets. An outcome-based evaluation system that integrates economic, social, and environmental dimensions will be more effective in encouraging village governments to allocate Village Funds strategically and transformatively.

The importance of the results of this research also lies in its contribution to the agenda of localization of the SDGs in Indonesia. The finding that only 41.1% of villages managed to achieve the target of the set Village SDGs indicator indicates that accelerating the achievement of the SDGs requires a more comprehensive strategy than just providing financial resources. Strengthening institutional capacity is a fundamental prerequisite that must be prioritized in the roadmap for achieving the 2030 Village SDGs. Without systematic interventions to increase institutional capacity, especially in disadvantaged and severely disadvantaged villages, the risk of leaving no one behind in the sustainable development agenda becomes very high.

In a global context, the findings of this study contribute to the literature on the localization of SDGs and capacity building for sustainable development in developing countries. Indonesia, with its vast archipelagic characteristics, high

geographical and socio-cultural heterogeneity, and complex decentralized governance system, provides a natural laboratory to examine the dynamics of sustainable development implementation at the grassroots level. Lessons learned from Indonesia's experience in integrating the Village Fund with the Village SDGs agenda can provide a valuable reference for other developing countries that face similar challenges in transforming development resources into sustainable and inclusive outcomes.

Summary of Research Results (Description of Findings)

The results of the study revealed a comprehensive profile of the institutional capacity of 360 village governments which showed heterogeneous conditions with an average index of 62.45 on a scale of 0-100, indicating capacity in the medium category but with significant variations between villages and between dimensions. The dimension of structural and organizational capacity showed the highest achievement with a score of 68.32, reflecting that the majority of villages already have a relatively clear organizational structure and a structured division of tasks in accordance with the regulations governing the organizational structure of the village government. However, the high achievement in this structural dimension has not been balanced by the capacity in other substantive dimensions, especially information technology which shows the lowest score of 54.27, indicating a wide digital gap and limited technological literacy among village officials.

The dimension of human resource competence shows a critical challenge with 28.9% of villages in the low category, reflecting limitations in aspects of formal education, work experience, technical knowledge about village financial management and SDGs, and analytical skills in planning and decision-making. The dimension of system and procedure capacity is in the medium category with a score of 60.15, indicating that although most villages already have standard operational procedures for the management of Village Funds, their implementation still faces various obstacles ranging from inconsistent compliance, weak documentation, to lack of updating procedures in accordance with regulatory changes. The participatory planning dimension showed a score of 58.43, revealing a paradox between the implementation of formal village deliberation rituals and limitations in facilitating substantive community participation, especially marginalized groups such as women, youth, and the poor.

The dimensions of governance and accountability are in the medium category with a score of 61.38, where most villages have implemented basic transparency practices such as information boards and periodic reporting, but are still limited to more substantial aspects of accountability such as community complaint mechanisms, outcome-based performance evaluation, and effective internal audit systems. The variation in institutional capacity between village typologies shows a consistent and significant pattern, where independent villages have a capacity index of 78.92, far exceeding the very backward villages with an index of 45.67. The ANOVA test confirmed significant differences between typologies with large effect sizes (Î· Â² =

0.496), indicating that the status of village development has a strong association with the institutional capacity of the village government.

Measuring the effectiveness of the implementation of the Village Fund yielded important findings about the gap between administrative effectiveness and substantive effectiveness. The absorption rate of the Village Fund budget reached 92.35%, indicating high administrative ability in the aspect of disbursement and budget utilization in accordance with the set timeline. The effectiveness of the process with a score of 68.45 shows that most villages have followed formal procedures in planning, implementing, and reporting Village Funds. However, the effectiveness of the output with a score of 64.12 and the effectiveness of the outcome with a score of 61.01 indicate that high administrative ability has not proportionately produced a substantive impact on the welfare of the community and the improvement of village socio-economic conditions.

The achievement of the Village SDGs shows significant variation between goals, where the Village Infrastructure and Innovation goals achieved the highest score of 71.25, in line with the pattern of Village Fund allocation which is still dominated by the development of physical infrastructure such as village roads, irrigation, and other public facilities. The goal of Villages Without Poverty achieved a score of 65.42, Food Security 63.78, and Quality Education 62.35, indicating that despite progress, the achievement is still at a moderate level and has not been optimal. On the other hand, goals related to environmental sustainability aspects such as Clean Energy Villages (52.35%), Village Climate Action (54.62%), and Village Environmental Sustainability (56.88%) showed relatively low achievements, indicating that the environmental dimension in sustainable development has not been a top priority in the planning and implementation of the Village Fund.

Causal relationship analysis using multiple regression resulted in fundamental findings that the six dimensions of institutional capacity simultaneously explain 61.3% of the variance in the effectiveness of the implementation of the Village Fund, with a value of $F(6, 353) = 93.456$, $p < 0.001$, confirming a very statistically significant model. HR competence showed the greatest influence with a standardized beta coefficient of 0.398 ($p < 0.001$), indicating that an increase in one standard deviation in HR competence resulted in an increase of 0.398 standard deviation in the effectiveness of the implementation of the Village Fund, after controlling for other capacity dimensions. The system and procedures showed a significant influence with a beta of 0.276 ($p < 0.001$), confirming the importance of formalization and standardization of the Village Fund management process. Governance and accountability with a beta of 0.265 ($p < 0.001$) confirmed that transparency, responsiveness, and internal control systems contributed substantially to the effectiveness of implementation.

Participatory planning showed a significant influence with a beta of 0.245 ($p < 0.01$), indicating that community involvement in the planning process not only fulfills the normative principles of deliberative democracy but also contributes instrumentally to the quality of decisions and program

responsiveness to the real needs of the community. Structural and organizational capacity with a beta of 0.187 ($p < 0.01$) showed that structural clarity, division of tasks, and internal coordination contributed positively to implementation effectiveness, although the effect was relatively small compared to other dimensions. Information technology showed the smallest but still significant influence with a beta of 0.142 ($p < 0.05$), indicating that although the digitization of village government administration is still in its early stages, the use of information technology has made a positive contribution to improving the efficiency and transparency of Village Fund management.

The mediation analysis using the Baron and Kenny approach and the Sobel test yielded important findings on the indirect mechanism of institutional capacity influence on the achievement of the Village SDGs. The total effect of institutional capacity on the achievement of the Village SDGs was 0.876 ($p < 0.001$), which consisted of a direct effect of 0.412 ($p < 0.001$) and an indirect effect through the effectiveness of the implementation of the Village Fund of 0.464 ($p < 0.001$). The proportion of mediation of 53.0% indicates that more than half of the influence of institutional capacity on the achievement of the Village SDGs works through improving the quality of Village Fund implementation, while the remainder is a direct influence that may work through other mechanisms such as the ability to mobilize non-Village Fund resources, partnerships with external stakeholders, or program innovations that are not entirely dependent on the Village Fund.

The moderation analysis revealed that the influence of institutional capacity on the effectiveness of the implementation of the Village Fund is not constant but varies depending on external contextual conditions. The quality of the mentoring showed the strongest moderation effect with an interaction coefficient of 0.234 ($p < 0.001$) and an additional contribution to the described variance of 4.8%. Simple slope analysis revealed that in the condition of high-quality assistance (1 SD above the mean), the slope of the relationship between institutional capacity and implementation effectiveness was 0.757 ($p < 0.001$), while in the condition of low-quality assistance (1 SD below the mean), the slope was 0.523 ($p < 0.001$). The statistically significant slope difference of 0.234 confirms that quality mentoring strengthens the influence of institutional capacity, indicating that investment in the mentoring system can provide a multiplier effect on strengthening institutional capacity.

The support of the supra-village government showed a moderation effect with a coefficient of 0.198 ($p < 0.001$) and an additional contribution of 3.6%, indicating that support in the form of technical guidance, coordination facilitation, and allocation of technical assistance from the sub-district and district governments can strengthen the ability of the village government to implement the Village Fund effectively. Community social capital with a moderation coefficient of 0.176 ($p < 0.01$) and a contribution of 2.8% shows that social cohesion, trust between citizens, and reciprocity norms in the community create a conducive environment for village governments to implement development programs, especially through facilitating community

participation and reducing transaction costs in mobilizing local resources. The quality of the regulation showed a moderation effect with a coefficient of 0.165 ($p < 0.05$) and a contribution of 2.3%, indicating that the clarity, consistency, and stability of regulations on Village Funds and Village SDGs can facilitate village governments in conducting medium-term planning and reduce uncertainty in decision-making.

The cluster analysis produced four typologies of institutional capacity with distinctive characteristics. The Innovator Cluster, which covers 21.7% of villages, shows a superior profile with a capacity index of 81.45, where all dimensions are in the high category with special advantages in participatory planning (84.32) and human resource competence (83.67). Villages in this cluster showed a very high effectiveness of the implementation of the Village Fund (79.23) and the achievement of the Village SDGs reached 78.46, indicating the transformative ability to utilize the Village Fund to create development innovations and substantive impacts on community welfare. The largest conventional cluster covering 36.7% of villages shows a medium-low capacity profile with an index of 58.23, where the structural dimension is relatively good (62.45) but the substantive dimensions such as human resource competence (52.34) and information technology (49.78) are still weak. The pattern of Village Fund management in this cluster tends to be routine and conventional with a focus on physical infrastructure without significant innovation, resulting in moderate implementation effectiveness (60.12) and moderate achievement of the Village SDGs (59.34).

The Developing Cluster covers 26.4% of villages with a relatively balanced medium capacity profile with an index of 64.78, where all dimensions are in the range of 60-68 without critical weaknesses in certain dimensions. Villages in this cluster show great potential to transform into the group of Innovators with targeted interventions, as reflected by the effectiveness of the implementation of the Village Fund which is quite good (65.45) and the achievement of the Village SDGs which is above the overall average (64.23). The Weak Cluster covers 15.3% of villages with a low capacity profile in all dimensions with an index of 48.67, where critical weaknesses are mainly in information technology (38.45) and human resource competence (43.23). Villages in this cluster showed low implementation effectiveness of Village Funds (50.34) and Village SDGs achievement that was far below average (48.23), indicating fundamental limitations in institutional capacity that hinder transformative capabilities in the use of Village Funds.

Comparison with Previous Research

This study confirms that institutional capacity is the main determinant of the effectiveness of the implementation of the Village Fund and the achievement of the Village SDGs. This is in line with the findings Nguyen dan Kim (2020) which shows local institutional capacity explains 58% of the variance in implementation effectiveness, and is confirmed by the results of this study which show 61.3% variance, while expanding it with a more detailed mapping of capacity dimensions. Harini et al. (2025)stated based on data

analysis, significant differences in economic, social, cultural, and environmental aspects existed before and after the development of the Ciampea Fort tourist village in Bogor Regency, Indonesia. Many studies have examined the impact of tourism village development on social, economic, cultural, and environmental aspects. However, no comprehensive research has been conducted that is supported by empirical data. Most of the research has been conducted partially and unrelated to the SDGs. The issue of the SDGs distinguishes it from previous research on the development of sustainable halal tourism villages.

Lei et al. (2025) show the results that between 2013 and 2022, digital villages in China have progressed (average annual growth rate: 9.43%), with the spatial distribution pattern of "superior east, inferior west, prosperous south, and declining north". National and regional digital villages have been growing every year, with absolute and relative disparities increasing, increasing extensibility, and increasing multipolarization. The development of digital villages is increasingly unbalanced, with differences between regions driving "eastern, central, and western" disparities and intraregional disparities driving North-South disparities.

Kou et al. (2025) The results of the study show a continuous increase in attention to ecological rural waste treatment technologies, both domestically and internationally.

Regarding mentoring, this research is partially different from Handra dan Junaidi (2021) who find mentoring to be insignificant, by showing that what determines is the quality of mentoring (companion competence, intensity of interaction, relevance of substance), not just its existence, in line with institutional support theory. In the typology of village governance, this research complements the Antlöv et al. (2016) by identifying four empirical clusters of Innovators, Conventional, Developing, and Weak based on multivariate cluster analysis. The mediating findings of the effectiveness of the implementation of the Village Fund of 53% in the relationship between institutional capacity–the achievement of the Village SDGs is a new contribution that has not been discussed in previous studies, explaining the direct and indirect causal pathways of institutional capacity.

The disparity in capacity between village typologies is in line with Sutiyo & Maharjan (2017) However, the study measured it quantitatively with a 33.25-point gap between independent and severely disadvantaged villages, and highlighted qualitative differences in organizational culture, innovation, and sustainability orientation. In the context of the global literature on the localization of SDGs, these findings confirm the emphasis on Martínez-Vérez et al. (2025)on the importance of local institutional capacity and community participation, while adding to the typical challenges of rural Indonesia such as limited human resources, digital divides, and conventional development paradigms that demand contextual and locally-specific SDGs localization strategies.

Interpretation (Meaning of Research Results)

This research is interpreted through an institutional capacity framework that views institutional capacity as an emergent nature of the interaction of organizational structure, processes, resources, and culture, rather than simply an aggregation of individual capabilities. The dominance of the influence of human resource competencies on the effectiveness of the implementation of the Village Fund reflects human capital theory, that the knowledge and skills of village apparatus are the main differentiators in the context of limited resources and complex tasks (Chiu & Lien, 2025). However, individual competencies are only in the form of organizational performance if they are supported by clear systems and procedures, a culture that supports innovation and learning, and leadership that is able to mobilize and optimize individual capacity.

The gap between high administrative effectiveness and only moderate outcome effectiveness indicates a gap in the implementation of decentralization policies. Village governments are relatively proficient in procedural aspects such as budget absorption and document completeness, but are still weak in strategic capacities: designing transformative programs, incorporating sustainability perspectives, and facilitating substantive community participation. This is also related to the phenomenon of symbolic compliance, where greater focus is given to formal-administrative compliance that is measured and supervised by the supra-village government, while the quality of outcomes and welfare impacts receive less attention because they are difficult to measure and are not directly related to sanctions or incentives.

The dominance of the allocation of Village Funds for physical infrastructure is explained through path dependency and institutional inertia. The history of Indonesian village development, which has long been oriented towards infrastructure, has made village officials and the community more familiar and comfortable with physical programs that are tangible and easy to see. From a political economy perspective, infrastructure projects also provide quick and clear political benefits for village heads compared to less visible and long-term capacity building programs or behavior changes. The role of mentoring moderation is in line with organizational learning theory. The village companion functions as a knowledge broker that connects the village government with knowledge and good practices from outside. Effective mentoring is not instructive, but facilitative: it encourages reflection, learning, and problem-solving by the village itself, with the key to the quality of relationships and trust.

The typology of the four institutional capacities reflects the heterogeneity of the development trajectory influenced by historical, geographical, socio-cultural, and political factors. Innovator groups generally enjoy access to external resources, visionary leadership, and high social capital; Weak groups tend to be trapped in marginalization and isolation. The existence of the Developing group shows that the institutional trajectory is not deterministic: with the right interventions, they have the potential to upgrade to Innovators, in line with a capability approach that emphasizes the importance of

overcoming binding constraints (Sitti Roskina Mas et al., 2021; USADI, ST., MT., 2023).

The proportion of mediation of 53% indicates that the effectiveness of the implementation of the Village Fund is only one of the mechanisms linking institutional capacity with the achievement of the SDGs. The variation in achievement between SDGs goals reflects the alignment between the incentive structure of the Village Fund and the type of goals; Goals that are not an explicit priority, such as clean energy and the environment, tend to be left behind. Finally, the pattern of capacity disparity between village typologies reinforces the existence of spatial inequality and territorial traps, where villages that are more connected and historically more concerned enjoy a cumulative cycle of excellence, while disadvantaged villages are trapped in a circle of capacity limitations.

Implications of Research Results

This study emphasizes the need for major changes in the strategy to strengthen village governance to accelerate the achievement of the Village SDGs in Indonesia. The coaching approach must be adjusted to the typology of village capacity, no longer uniform. Villages with low capacity need intensive and long-term interventions, while conventional villages need to be encouraged to transform the management of Village Funds to be more innovative. Developing villages need acceleration in aspects of capacity that are still weak, while innovator villages need to function as learning centers.

The village assistance system must be improved in quality through improving competence, a more ideal ratio of companions, and a more strategic and contextual approach to mentoring. The monitoring and evaluation system of the Village Fund needs to shift from simply measuring inputs and outputs to assessing outcomes and impacts on the SDGs, accompanied by performance-quality-based incentive reforms. Digitizing village government is a priority, including providing infrastructure, improving digital literacy, and developing an integrated and easy-to-use information system. Regulations on the use of Village Funds also need to be revised to be more flexible, allowing innovation while maintaining accountability and community participation.

Practically, the village government needs to build an organizational culture that is adaptive, innovative, transparent, and accountable. For further research, longitudinal, experimental, comparative cross-country studies, in-depth ethnographic research, and more explicit analysis integrating gender perspectives in the context of institutional capacity and implementation of the Village Fund are needed.

CONCLUSION

This study demonstrates that institutional capacity determines Village Fund effectiveness in achieving SDGs. Analyzing 360 Indonesian villages, we found that six capacity dimensions (structural and organizational capacity, human resource competence, financial management systems, participatory planning, information technology, and governance and accountability)

contribute 64.7% to implementation effectiveness, with mentoring quality as the strongest moderator (4.8%). Four distinct capacity typologies emerged: Innovators (21.7%), Conventional (36.7%), Developing (26.4%), and Weak (15.3%), each requiring differentiated interventions. This research contributes theoretically by developing a validated institutional capacity framework (Cronbach's Alpha > 0.85) for fiscal decentralization contexts, and empirically by providing quantitative evidence on capacity variations and SDG achievement.

The diagnostic typology framework enables policymakers to design evidence-based strengthening programs. Future research should explore the temporal dynamics of capacity building, expand to Eastern Indonesia regions, and employ longitudinal designs to capture transformation processes. Study limitations include the cross-sectional design, geographical focus on Java and Sumatra, and reliance on self-reported data. Moving forward, policymakers should implement differentiated capacity-building programs tailored to each village typology, establish continuous monitoring systems for capacity development, and strengthen mentoring quality as a critical success factor. Future research should adopt longitudinal designs to track capacity transformation, expand geographical coverage to Eastern Indonesia, and employ mixed-methods approaches to understand causal mechanisms more comprehensively.

ACKNOWLEDGEMENT

The authors wish to express their sincere gratitude to the following parties for their invaluable support in the preparation and completion of this article:

We thank the Ministry of Village, Development of Disadvantaged Regions, and Transmigration of the Republic of Indonesia for granting access to policy documentation and statistical data that formed the empirical basis of this study. We are also indebted to the village governments, village apparatus, community representatives, and facilitators in the selected districts and provinces for their willingness to participate in field-surveys and interviews.

We further acknowledge the contributions of the research team members, enumerators, and data coordinators who ensured the integrity and accuracy of both the quantitative and qualitative data collection. We also appreciate the insightful comments and suggestions from peer reviewers and our colleagues at [Institution Name], which have strengthened the analytical rigor and clarity of our work. Finally, the authors bear full responsibility for any remaining errors or omissions in this publication.

REFERENCES

Ahmad, B., & Ercek, M. (2018). Absorptive Capacity and Institutional Theory: A Review and Appraisal of Future Research Agenda. *Journal of Economic & Management Perspectives*, *12*(2).

Ali, Y., Tariq, M., & Amjad, M. H. (2025). Modelling and classification of barriers in the construction of smart villages in developing countries. *Evaluation and Program Planning*, *111*, Article 102565. https://doi.org/10.1016/j.evalprogplan.2025.102565

Ambya, A. (2020). Transformasi Alokasi Dana Desa terhadap Ketimpangan Pendapatan dan Wilayah Perdesaan di Indonesia. *Jurnal Ekonomi Pembangunan*, *9*(1). https://doi.org/10.23960/jep.v9i1.84

Budiwidodo, S., Suherli, E., Hidayat, A. R., & Chandrasari, F. (2025). Conflict Management In The Work Environment: A Qualitative Study On Village Economic Units. *Journal of Economic Development and Village Building*, *2*(2), 105–113. https://doi.org/10.59261/jedvb.v2i2.30

Chiu, J., & Lien, H. L. (2025). Bridging the Gap: Value-Based Strategies in Virtual Reality Integration for Developing SDG 13 and Global Competence. *Sustainability Switzerland*, *17*(12), Article 5437. https://doi.org/10.3390/su17125437

ElAlfy, A., Palaschuk, N., El-Bassiouny, D., Wilson, J., & Weber, O. (2020). Scoping the evolution of corporate social responsibility (CSR) research in the sustainable development goals (SDGS) era. In *Sustainability (Switzerland)* (Vol. 12, Issue 14). https://doi.org/10.3390/su12145544

Fagbemi, F. (2021). COVID-19 and sustainable development goals (SDGs): An appraisal of the emanating effects in Nigeria. *Research in Globalization*, *3*. https://doi.org/10.1016/j.resglo.2021.100047

Febriansyah, E., Andeka, R., & Hernadianto, H. (2023). Akuntabilitas Pengelolaan Alokasi Dana Desa Di Desa Talang Buai Kecamatan Selagan Raya Kabupaten Mukomuko. *Reliable Accounting Journal*, *2*(2). https://doi.org/10.36352/raj.v2i2.455

Fei, W., Opoku, A., Agyekum, K., Oppon, J. A., Ahmed, V., Chen, C., & Lok, K. L. (2021). The critical role of the construction industry in achieving the sustainable development goals (Sdgs): Delivering projects for the common good. *Sustainability (Switzerland)*, *13*(16). https://doi.org/10.3390/su13169112

Ferdiansyah, R., & Ridzki, M. M. (2025). The Role of Digital Financial Inclusion in Improving Payment System Efficiency in Developing Countries. *Economics Monetary Journal*, *1*(1), 22–31. https://doi.org/10.64910/ecmont.v1i1.4

Harini, S., Rahmawati, R., Silaningsih, E., Nurhayati, I., Mutmainah, I., Rainanto, B. H., & Endri, E. (2025). Development of Halal Tourism Villages Based on Local Culture and Sustainability. *Tourism and Hospitality*, *6*(2), Article 55. https://doi.org/10.3390/tourhosp6020055

Hariyanto, W., & Wariyanto, A. (2020). Peran Dana Desa Untuk Percepatan Transformasi Desa Di Era Revolusi Industri 4.0. In *Prosiding Seminar*

Nasional Kesiapan Sumber Daya Pertanian dan Inovasi Spesifik Lokasi Memasuki Era Industri 4.0.

Hidayat, A. R. (2025). Implementation Of Change Management In Bumdes: A Case Study Of A Family-Based Village Business. *Journal of Economic Development and Village Building*, *3*(1), 12–23. https://doi.org/10.59261/jedvb.v3i1.28

Imawan, A., & Mas'adah, N. (2021). TRANSFORMASI TATA KELOLA DANA DESA UNTUK MENINGKATKAN PENDAPATAN DESA. *Jurnal Akuntansi Multiparadigma*, *12*(3). https://doi.org/10.21776/ub.jamal.2021.12.3.39

Indana, F., & Pahlevi, R. W. (2023). A bibliometric approach to Sustainable Development Goals (SDGs) systematic analysis. In *Cogent Business and Management* (Vol. 10, Issue 2). https://doi.org/10.1080/23311975.2023.2224174

Kou, Y., Liu, F., Li, T., Yan, C., Wang, J., Wang, C., & Yuan, D. (2025). The Sustainable Development Path of Ecological Treatment Technology for Rural Sewage: A Bibliometric Perspective. *Water Switzerland*, *17*(9), Article 1299. https://doi.org/10.3390/w17091299

Lei, M., Yang, X., Hong, S., Wang, D., Zhang, W., & Chen, H. (2025). Sustainable Digital Rural Development: Measurements, Dynamic Evolutions, and Regional Disparities—A Case Study of China. *Sustainability Switzerland*, *17*(9), Article 4250. https://doi.org/10.3390/su17094250

Martínez-Vérez, V., Gil-Ruiz, P., Montero-Seoane, A., & Cruz-Souza, F. (2025). Rural Depopulation in Spain from a Gender Perspective: Analysis and Strategies for Sustainability and Territorial Revitalization. *Sustainability Switzerland*, *17*(7), Article 3027. https://doi.org/10.3390/su17073027

Mehmood, Y. (2025). Estimating the relationship between credit constraints, technical efficiency, and food security of rice growers in Punjab, Pakistan: Implications for sustainable development. *Geojournal*, *90*(6), Article 286. https://doi.org/10.1007/s10708-025-11523-1

Obaideen, K., Shehata, N., Sayed, E. T., Abdelkareem, M. A., Mahmoud, M. S., & Olabi, A. G. (2022). The role of wastewater treatment in achieving sustainable development goals (SDGs) and sustainability guideline. *Energy Nexus*, *7*. https://doi.org/10.1016/j.nexus.2022.100112

Puspaningrum, D., & Sunartomo, A. F. (2022). Desa Ramah Perempuan: Pengembangan Kapasitas Perempuan Desa Sumberpakem dalam Implementasi SDG's. *National Multidisciplinary Sciences*, *1*(2). https://doi.org/10.32528/nms.v1i2.58

Qian, Y., & Li, X. (2025). From Space–Behavior Mismatch to Regional Integration: A Cross-Scale Social Network Analysis of Sustainable Rural Construction in Suburban China. *Sustainability Switzerland*, *17*(20), Article 9137. https://doi.org/10.3390/su17209137

Sitti Roskina Mas, Arifin Suking, & Ikhfan Haris. (2021). Asistensi Dan Edukasi Penerapan Keseimbangan Tiga Dimensi Embangunan Berkelanjutan (Lingkungan, Sosial Dan Ekonomi) Dalam Mendukung Pencapaian Sdg Desa. *J-ABDI: Jurnal Pengabdian Kepada Masyarakat*, *1*(2). https://doi.org/10.53625/jabdi.v1i2.45

Sutiyo, & Maharjan, K. L. (2017). Decentralization and Rural Development in Indonesia. In *Decentralization and Rural Development in Indonesia*. https://doi.org/10.1007/978-981-10-3208-0

USADI, ST., MT., D. (2023). Sdg' Desa Dalam Perencanaan Pengembangan Ekonomi. *PROSIDING*, *3*. https://doi.org/10.59134/prosidng.v3i.343

Wang, H., & Chen, C. (2025). Polycentric governance for rural production-living-ecological space: Lessons from an ethnic mountain village in China and implications for global sustainable development. *Habitat International*, *163*, Article 103489. https://doi.org/10.1016/j.habitatint.2025.103489

Yuan, Y. H., Gao, R. L., Tseng, Y. C., Chen, C. L., & You, Y. R. (2026). The Impact of Aesthetic Sensibility, Color Psychology, and Design Self-efficacy on Designing Preschool Teaching Aids. *Lecture Notes in Computer Science*, *15914*, 17–27. https://doi.org/10.1007/978-3-031-98197-5_3