

# The Effectiveness of Village Fund Allocation in Improving Farmers' Welfare in Deli Serdang

*Effectiveness of Village Fund Allocation in Improving Farmers'*

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## ABSTRACT

*This study examines the effectiveness of village fund allocation as an instrument for advancing the economic welfare of agricultural households in Deli Serdang Regency, North Sumatra Province, over the period 2019 to 2024. Using a quantitative research framework and secondary data, this study builds a multivariable regression model that includes community participation, institutional capacity, agricultural infrastructure spending, and village fund allocation as the main predictors of farmers' welfare outcomes. With an adjusted R-squared of 0.591, the dependent variable, the farmers' welfare index, shows a moderate but statistically significant response to all four independent factors. Despite consistent year-on-year increases in village fund disbursements from IDR 156.4 billion in 2019 to IDR 228.9 billion in 2024, the farmer exchange rate only surpassed the benchmark threshold of 100 from 2022 onward, indicating a structural lag between fiscal input and welfare output. The study concludes that strengthening institutional governance, redirecting a greater proportion of allocations toward productive agricultural empowerment programs, and institutionalizing participatory planning mechanisms are necessary preconditions for maximizing the developmental impact of village funds on farming communities.*

**Keywords:** *Agricultural Infrastructure, Community Participation, Farmers' Welfare, Institutional Capacity, Village Fund Allocation.*

## INTRODUCTION

The enactment of Law Number 6 of 2014 marked a major shift in Indonesia's rural governance by introducing village funds and granting villages authority over planning, budgeting, and implementing local development programs, transforming them from passive recipients to active agents of their own development (Sulistianingsih et al., 2025). Parera et al. (2024) note that while village fund implementation is generally adequate, improvements in planning, community participation, reporting, and accountability are still needed to strengthen governance effectiveness.

The fiscal commitment underpinning this transformation has been substantial and sustained. Since its initial disbursement in 2015, the national village fund budget has expanded from IDR 20.7 trillion to over IDR 71 trillion by 2024, reflecting sustained political commitment to rural transformation (Kemendes PDTT, 2024). This exponential growth in allocations signals not merely a budgetary decision, but a broader ideological orientation toward village-centered development as a cornerstone of Indonesia's poverty reduction and rural equity agenda. Across more than 74,000 villages nationwide, these funds have financed infrastructure construction, social assistance programs, and, to a lesser extent, productive economic empowerment initiatives targeting rural households.

Within this national framework, Deli Serdang Regency in North Sumatra emerges as a structurally relevant and analytically instructive case (Faried et al., 2025; Sembiring et al., 2025). Home to 394 villages and a population in which smallholder agriculture

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constitutes the primary livelihood system for approximately 42 percent of rural households, the regency has consistently received substantial village fund allocations totaling over IDR 1.1 trillion between 2019 and 2024 (Faried et al., 2022; BPS Deli Serdang, 2024). Given its demographic profile and agricultural character, Deli Serdang represents an important site for evaluating whether the ambitions of the Village Law are translating into tangible improvements in farmer welfare. Notwithstanding this fiscal investment, welfare improvements among farming households have remained uneven: the Farmer Exchange Rate (*Nilai Tukar Petani/NTP*) oscillated below the equilibrium threshold of 100 until 2022, and rural poverty rates, while declining, continue to exceed urban counterparts by a considerable margin (BPS Sumatera Utara, 2024). This persistent gap between fiscal input and welfare outcome demands rigorous empirical examination.

The divergence between resource allocation and welfare improvement is not unique to Deli Serdang, but it is particularly pronounced in agricultural regencies where the structure of rural livelihoods requires targeted productive investment rather than generic infrastructure provision. Village fund deployment disproportionately prioritizes physical infrastructure over productive empowerment programs, according to previous research, which has indirect and delayed welfare consequences (Imawan & Purwanto, 2020; Yusuf & Khoirunurrofik, 2022). While road construction, irrigation rehabilitation, and public facility development are undeniably important, their contribution to farmer welfare is mediated by a range of institutional and participatory factors that existing literature has not yet fully mapped (Common, 2017). In particular, limited empirical attention has been directed toward the specific mediating roles of institutional capacity and community participation in shaping welfare outcomes within regency-level agricultural contexts.

Addressing this gap, this study examines the effectiveness of village fund allocation as an instrument for advancing the economic welfare of agricultural households in Deli Serdang Regency, North Sumatra Province, over the period 2019 to 2024. The present study integrates four explanatory variables: village fund allocation, agricultural infrastructure expenditure, village institutional capacity, and community participation into a unified analytical framework, tested against longitudinal secondary data from Deli Serdang Regency. The research pursues three interrelated objectives: first, to measure the magnitude and statistical significance of the relationship between village fund management variables and farmers' welfare indicators; second, to determine whether the expenditure composition of village funds aligns with the welfare needs of farming households; and third, to develop evidence-based policy recommendations for maximizing village fund effectiveness in the agricultural sector. Through this integrated approach, the study aims to contribute to ongoing scholarly discourse on fiscal decentralization, rural governance, and sustainable agricultural development within the Indonesian context, while offering actionable insights for policymakers seeking to strengthen the developmental impact of village fund governance at the regency level.

## **LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT**

### **The Effect of Village Fund Allocation on Farmers Welfare Index**

Theoretical foundations for the village fund mechanism are rooted in fiscal decentralization theory, which posits that proximity between decision-makers and beneficiaries enhances allocative efficiency and responsiveness (Razzak & Qodir, 2025). In Indonesia's institutional context, this theory manifests through the devolution of budgetary authority to village governments, enabling localized diagnosis of development needs and tailored resource allocation. Lamba and Lamba (2025) documented that regions with stronger local governance structures exhibited more responsive village fund utilization patterns, lending empirical support to decentralization theory.

The principal-agent framework further illuminates the governance challenges inherent in village fund administration. Village heads function as agents entrusted with resources allocated by the central government (principal), with asymmetric information and limited monitoring capacity creating fertile conditions for misallocation. Idrus et al. (2024) found that governance quality operationalized through transparency indices, audit compliance

rates, and participatory planning measures was the strongest predictor of village fund effectiveness across a panel of Indonesian districts. Empirical literature on the welfare impact of village funds presents nuanced findings. Imawan and Purwanto (2020) reported that village fund disbursements reduced poverty headcount ratios by an average of 0.23 percentage points per year across Indonesian districts, although the magnitude of the effect varied depending on governance quality. Similarly, Sembiring and Winaro (2018) and Siagian et al. (2021) found that the implementation of village fund policy positively and significantly improved community welfare through community empowerment as a mediating mechanism. Supporting this finding, Dawali et al. (2025) also reported that village fund allocation significantly enhanced community empowerment, which subsequently contributed to improved welfare among rural households.

H1: Village fund allocation has a positive effect on farmers' welfare index.

### **The Effect of Agricultural Infrastructure Expenditure on Farmers Welfare Index**

The welfare of agricultural households is a multidimensional construct encompassing income adequacy, food security, access to productive assets, health status, and social inclusion. In Indonesian statistical practice, two principal indices are employed for monitoring purposes: the farmers' welfare index and the farmer exchange rate. The NTP, calculated as the ratio of prices received by farmers to prices paid by farmers for both consumption and production inputs, functions as a proxy measure of farmers' purchasing power and economic position relative to non-farm sectors (Sembiring, 2018; BPS, 2023).

Fadilah and Biduri (2024) argued that public expenditure directed at rural areas exerts its welfare impact through two channels: a direct channel through income transfers and social protection programs, and an indirect channel through infrastructure provision that reduces transaction costs and expands market access. Their meta-analysis of fourteen Indonesian regencies indicated that the indirect channel accounted for approximately 62 percent of the total welfare effect of village funds, emphasizing the critical role of infrastructure complementarities. Ramadhani et al. (2025) found that agricultural infrastructures, such as roads, irrigation, and storage facilities, have a positive and significant effect on farmer household income, primarily through improved market access. Similarly, Sudarwati and Nasution (2024) showed that government investment in irrigation and rural roads increases agricultural productivity and reduces production costs, thereby improving the economic welfare of smallholder farmers. Similarly, Yusuf and Khoirunurrofik (2022) found that a 10 percent increase in agricultural infrastructure spending was associated with a 2.8 percent improvement in village-level economic output, indicating a positive link between infrastructure investment and rural economic performance.

H2: Agricultural infrastructure expenditure has a positive effect on farmers' welfare index.

### **The Effect of Village Institutional Capacity on Farmers Welfare Index**

Village institutional capacity is a key determinant of how effectively public resources are translated into welfare outcomes at the local level. In the context of village fund governance, institutional capacity includes the administrative competence of village officials, the quality of financial management, the functioning of village deliberative forums, and adherence to regulatory procedures in planning and implementation (Alias et al., 2016; Rahardjo et al., 2021). Strong institutional capacity enables village governments to identify community needs accurately, allocate resources efficiently, and implement programs effectively, thereby improving welfare outcomes for rural populations, including farming households. Within the North Sumatran context, Musfirah et al. (2023) identified village institutional capacity as a key mediating factor in improving farmer welfare, with villages possessing stronger administrative capacity achieving welfare improvement rates 34 percent higher than those with weaker capacity.

Rizal (2024) further confirmed that governance quality plays a crucial role in determining the welfare outcomes of village fund implementation.

Empirical studies consistently support the positive relationship between institutional quality and development outcomes. Adam et al. (2024) found that governance factors such as deliberative mechanisms, local regulations, and leadership quality significantly influence village development performance. Similarly, Hermawan (2019) reported that transparency, accountability, and participation are critical mediators of village fund effectiveness, contributing to economic self-reliance and social inclusion in rural communities. Sembiring et al. (2019) and Waworundeng et al. (2025) identified weak institutional capacity, such as limited human resources and low transparency, as major drivers of village fund mismanagement. Smas et al. (2025) further confirmed that stronger institutional arrangements are associated with more equitable resource distribution and improved access to productive resources, highlighting the importance of institutional capacity in enhancing the welfare impact of village funds.

H3: Village institutional capacity has a positive effect on farmers' welfare index.

### The Effect of Community Participation on Farmers' Welfare Index

Community participation is a core principle of participatory development theory, which states that the active involvement of beneficiaries in planning, implementing, and evaluating development programs improves the relevance and effectiveness of resource allocation (Hasanah et al., 2022; Sari et al., 2025). In village fund governance, participation occurs through mechanisms such as village deliberative, needs assessment forums, and monitoring activities that align fund utilization with the welfare priorities of local farming households. When communities are actively engaged in these processes, development programs are more likely to reflect grassroots agricultural needs and strengthen the link between fiscal transfers and welfare improvements (Pahlawan et al., 2020).

Empirical evidence in Indonesia supports this relationship. Phoek et al. (2024) found that community participation significantly influences the sustainability and effectiveness of village fund management, although participation can be limited by low civic literacy and elite dominance. Similarly, Dulkiah et al. (2023) showed that community involvement in village development programs contributes to economic empowerment and improved access to productive resources among rural households. Furthermore, Dawali et al. (2025) confirmed that community empowerment serves as a key mediating mechanism linking village fund allocation to welfare improvement. Collectively, these findings indicate that inclusive community participation plays an important role in enhancing farmers' welfare outcomes.

H4: Community participation has a positive effect on farmers' welfare index.

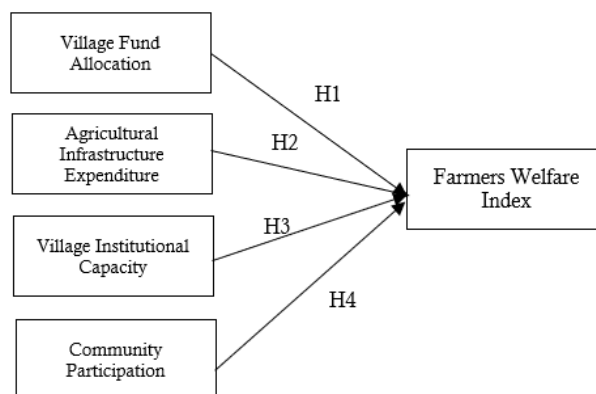


Figure 1. Research Framework

Figure 1 presents the research framework showing that village fund allocation, agricultural infrastructure expenditure, village institutional capacity, and community participation are proposed to influence the farmers' welfare index. The framework suggests that improvements in these governance and development factors contribute to better welfare outcomes for farming households.

## RESEARCH METHODS

In order to methodically investigate the relationship between village fund governance characteristics and agricultural household welfare outcomes throughout Deli Serdang Regency from 2019 to 2024, this study uses a quantitative longitudinal research approach. The analytical unit consists of all 394 villages within the regency, disaggregated across 22 sub-districts. The six-year observation window is deliberately structured to capture both pre- and post-COVID-19 pandemic dynamics, enabling assessment of fiscal policy resilience under varied macroeconomic conditions.

Secondary data were sourced from multiple official repositories, village financial realization reports obtained from the Deli Serdang Regional Government, regency-level agricultural and welfare statistics from BPS Deli Serdang covering the NTP, IKP, and rural poverty rates, national village fund disbursement data from the Ministry of Villages (*Pembangunan Daerah Tertinggal, dan Transmigrasi/PDPTT*) portal, and village governance assessment scores from the village development index compiled by the directorate general of village community development.

Four independent variables were operationalized for the regression model, namely, total village fund allocation (aggregated at sub-district level, IDR million), agricultural infrastructure expenditure as a share of total allocation, village institutional capacity index derived from IDM governance sub-scores, and community participation rate proxied by the percentage of villages with documented participatory planning attendance exceeding 50 percent. The dependent variable is the Farmers' Welfare Index (*Indeks Kesejahteraan Petani/IKP*), a composite measure synthesizing income, nutritional status, housing quality, and access to basic services.

Three steps are taken in order to analyze data. Descriptive statistical analysis first describes the distributional characteristics and central tendencies of every variable. Second, a Pearson correlation matrix checks for multicollinearity and finds bivariate connections. Third, the independent and joint explanatory power of the four predictor variables is measured using multiple linear regression with Ordinary Least Squares (OLS) estimation.

## RESULTS

Table 1 presents the longitudinal trajectory of village fund allocations alongside key agricultural welfare indicators across Deli Serdang Regency from 2019 to 2024. The data reveal a consistent upward trend in total allocations, increasing at a Compound Annual Growth Rate (CAGR) of approximately 7.9 percent over the study period. Correspondingly, the proportion directed toward agricultural infrastructure expenditure grew from 27.3 percent in 2019 to 31.4 percent in 2024, reflecting a gradual policy reorientation toward productive sector investment.

**Table 1.** Village Fund Allocation and Farmers' Welfare Indicators

Year	Total Village Fund (Billion IDR)	Agricultural Infrastructure Expenditure (Billion IDR)	Agricultural Allocation (%)	Farmers' Welfare Index	Number of Recipient Villages
2019	156.4	42.7	27.3%	48.6	394
2020	162.8	38.5	23.7%	47.9	394
2021	178.2	51.3	28.8%	53.2	394
2022	195.6	58.7	30.0%	57.4	394
2023	211.4	64.5	30.5%	61.7	394
2024	228.9	71.8	31.4%	64.3	394

Year	Total Village Fund (Billion IDR)	Agricultural Infrastructure Expenditure (Billion IDR)	Agricultural Allocation (%)	Farmers' Welfare Index	Number of Recipient Villages
Average	188.9	54.6	28.6%	55.5	394

The number of recipient villages indicates the total number of villages receiving village fund disbursements. A notable feature of Table 1 is the temporary contraction of agricultural infrastructure expenditure in 2020 (IDR 38.5 billion), attributable to the reorientation of village funds toward COVID-19 pandemic response activities under Government Regulation Number 21 of 2020. This reallocation coincided with a decline in the farmer welfare index from 48.6 in 2019 to 47.9 in 2020, providing indirect evidence of the welfare sensitivity of agricultural expenditure disruptions. Recovery in subsequent years was robust, with the farmer welfare index rising by 10.2 percent in 2021 following the restoration of normal expenditure patterns. Table 2 provides a summary of descriptive statistics for the principal variables employed in the regression analysis, drawing on the complete panel dataset of 394 villages observed over six years (n = 2,364 village-year observations).

Table 2. Descriptive Statistics of Research Variables

Variable	Minimum	Maximum	Mean	Std. Deviation
Village Fund Allocation (million IDR)	650.0	1.450.0	1.020.0	210.0
Agricultural Infrastructure Expenditure (million IDR)	120.0	540.0	310.0	98.0
Farmers' Welfare Index	45.20	72.80	60.35	6.45
Farmer Exchange Rate	91.3	108.7	99.8	4.87
Farmers' Household Income (million IDR/year)	14.5	42.8	27.6	7.13

Table 2 shows that the descriptive statistics reveal meaningful variability across all key dimensions. Village fund allocations range from IDR 650 million to IDR 1.45 billion, with a mean of IDR 1.02 billion and a standard deviation of IDR 210 million, indicating substantial inter-village disparity linked to population size, area, and poverty index weighting formulas applied by the central government. The farmers' welfare index exhibits a range of 27.6 index points (45.2 to 72.8), with a mean of 60.35, suggesting that a significant share of villages remain below the acceptable welfare threshold of 65. The farmer exchange rate, averaging 99.8 across the study period, hovers marginally below the equilibrium point of 100, confirming the persistent price-squeeze challenge confronting agricultural households. Table 3 disaggregates total village fund utilization by expenditure category for the years 2021–2023, providing insight into allocation priorities across the study period.

Table 3. Composition of Village Fund Expenditure by Category

Village Fund Expenditure Category	2021 (Billion IDR)	2022 (Billion IDR)	2023 (Billion IDR)	Average
Road and Bridge Infrastructure	38.4	41.2	44.8	22.5%
Irrigation and Clean Water Facilities	12.9	17.5	19.7	10.1%
Agricultural Economic Empowerment	21.3	25.8	28.6	13.8%
Community Health and Education	18.7	22.1	24.3	11.8%
Village Administration and Governance	15.2	16.8	18.1	9.0%
Village-Owned Enterprise Development	8.5	9.7	11.2	5.2%
Others	63.2	62.5	64.7	33.1%
Total	178.2	195.6	211.4	100%

The composition data in Table 3 reveal that road and bridge infrastructure consistently represents the largest single expenditure category (approximately 22.5 percent of total allocations), followed by productive agricultural empowerment programs (13.8 percent) and community health and education spending (11.8 percent). Village Enterprise Development (*Badan Usaha Milik Desa*/BUMDes) accounts for a modest 5.2 percent, limiting the potential for revenue-generating institutional structures at the village level. The persistence of a large residual category (33.1 percent under “Others”) reflects challenges in expenditure classification and warrants improvement in reporting granularity. Table 4 presents the results of the OLS multiple linear regression examining the effect of village fund management variables on the farmers’ welfare index.

**Table 4.** Multiple Linear Regression Results

Variable	Coefficient ( $\beta$ )	Std. Error	t-statistic	Probability
Constant	32.415	5.574	5.82	0.000
Village Fund Allocation (X1)	0.214	0.058	3.67	0.001
Agricultural Infrastructure Expenditure (X2)	0.187	0.064	2.94	0.004
Village Institutional Capacity (X3)	0.163	0.071	2.30	0.023
Community Participation (X4)	0.142	0.069	2.06	0.042
R-squared	0.618			
Adjusted R-squared	0.591			
F-statistic	22.847			0.000
Durbin-Watson	1.978			

The regression model demonstrates satisfactory overall fit, with an adjusted R-squared of 0.591, indicating that the four independent variables collectively account for approximately 59.1 percent of the variance in the farmers’ welfare index. The F-statistic of 22.847 ( $p < 0.001$ ) confirms the joint statistical significance of the model. All four independent variables exhibit positive and statistically significant relationships with farmers’ welfare at conventional significance thresholds. Village fund allocation ( $\beta = 0.214$ ,  $p = 0.001$ ) and agricultural infrastructure expenditure ( $\beta = 0.187$ ,  $p = 0.004$ ) are the two strongest predictors, consistent with prior empirical evidence on the infrastructure pathway of welfare improvement. Village institutional capacity ( $\beta = 0.163$ ,  $p = 0.023$ ) and community participation ( $\beta = 0.142$ ,  $p = 0.042$ ) exhibit smaller but statistically meaningful coefficients, underscoring the governance quality dimension of effective fund utilization. Table 5 contextualizes the regression findings by presenting key agricultural welfare indicators for Deli Serdang in comparison with provincial averages.

**Table 5.** Agricultural Welfare Indicators: Deli Serdang Regency vs. North Sumatra Province (2019–2024)

Year	NTP of Deli Serdang Regency	NTP of North Sumatra Province	Rural Poverty Rate (%)	Rice Productivity (Quintals/Ha)	Farmer Welfare Index Growth
2019	97.4	96.8	9.2	52.4	–
2020	95.1	94.3	9.8	50.1	-1.4 %
2021	98.7	97.5	9.1	53.8	+10.2 %
2022	102.3	101.2	8.7	56.2	+7.9 %
2023	105.6	103.8	8.2	58.4	+7.5 %
2024*	107.2	105.1	7.9	60.1	+4.2 %

Table 5 demonstrates that Deli Serdang’s NTP has consistently tracked slightly above the provincial average for Sumatera Utara, suggesting that village fund investments have contributed to a relatively more favorable terms-of-trade position for the regency’s farmers. The rural poverty rate exhibits a sustained downward trajectory from 9.2 percent in 2019 to a preliminary estimate of 7.9 percent in 2024, representing a cumulative reduction of 1.3 percentage points over the study period. Productivity, as a proxy for agricultural output performance, increased from 52.4 ku/ha in 2019 to 60.1 ku/ha in 2024, coinciding with expanding investment in irrigation infrastructure.

## DISCUSSION

The empirical evidence synthesized in this study yields a coherent narrative regarding the welfare impact of village fund governance in Deli Serdang Regency. The positive and statistically significant coefficients associated with all four predictor variables confirm that village funds, when effectively governed, constitute a meaningful instrument for advancing agricultural household welfare (Wardhani, 2023). However, the moderate magnitude of the individual coefficients, none exceeding 0.214 in the standardized regression framework, signals that village funds function primarily as an enabling rather than a transformative mechanism, operating within a broader ecosystem of agricultural development challenges (Yusuf & Khoirunurrofik, 2022; Husen et al., 2023).

The infrastructure pathway documented in this study aligns with the theoretical framework advanced by Yusuf and Khoirunurrofik (2022) and the empirical findings of Fadilah and Biduri (2024). Expenditure on farm roads, irrigation canals, and post-harvest facilities reduces per-unit production costs, expands spatial market access for perishable agricultural commodities, and attenuates price volatility, all of which translate indirectly into improved household income and purchasing power. The positive NTP trajectory observed from 2021 onward appears partially attributable to this infrastructure-mediated mechanism, particularly the expansion of irrigation coverage funded through village allocations.

The institutional capacity variable emerging as a statistically significant predictor ( $\beta = 0.163$ ) substantiates the theoretical proposition that governance quality mediates the resource-welfare relationship. This finding resonates with Idrus et al. (2024), who identified planning competence and monitoring rigor as the most consequential governance dimensions for village fund effectiveness. Villages with stronger institutional capacity are better positioned to conduct needs assessments that accurately reflect agricultural priorities, design programs with credible implementation logic, and maintain accountability structures that deter resource diversion. The relatively low BUMDes allocation share represents a missed opportunity in this regard: well-governed village enterprises could amplify the welfare impact of fund allocations by providing agricultural credit, collective marketing services, and value chain integration.

Community participation, though exhibiting the smallest coefficient among the four predictors ( $\beta = 0.142$ ), carries theoretical and practical significance. Participatory planning processes in Village Development Planning Meeting (*Musyawah Perencanaan Pembangunan Desa/Musrenbangdes*) forums serve dual functions: instrumentally, they improve information quality available to village planners by surfacing localized knowledge about agricultural constraints; normatively, they strengthen citizen ownership of development programs, which enhances voluntary compliance with program requirements and sustains behavioral changes beyond the formal project cycle (Suhardi et al., 2023; Rahayu et al., 2024). The COVID-19 disruption to participatory processes in 2020 coincided with the only year of negative farmer welfare index growth in the study period (-1.4 percent), though this correlation cannot be interpreted as causal in the absence of a counterfactual.

The residual unexplained variance (approximately 40.9 percent) in the regression model points to structural determinants of agricultural welfare that lie beyond village fund governance per se, global commodity price cycles, climate-related agricultural risks, labor market dynamics, and access to formal financial services, all of which independently shape household welfare trajectories. This finding is consistent with Musfirah et al.'s (2023) conclusion that village funds must be embedded within a comprehensive agricultural support architecture encompassing extension services, input subsidies, and market development programs to realize their full welfare potential.

From a policy perspective, the evidence collectively advocates for three priority interventions. First, the expenditure composition of village funds should be rebalanced toward productive empowerment programs, particularly BUMDes development, farmer group capacity building, and digital marketing infrastructure, which currently account for less than one-fifth of total allocations. Second, the Village Institutional Capacity Index

should be operationalized as a performance-linked criterion in village fund formula calculations, creating positive incentives for governance improvement. Third, participatory planning mechanisms should be strengthened through mandatory training for village planning facilitators and the introduction of digital participation platforms that overcome physical access barriers in geographically dispersed sub-districts.

## **CONCLUSION**

This study provides multi-dimensional empirical evidence that village fund governance constitutes a statistically significant determinant of agricultural household welfare in Deli Serdang Regency across the 2019–2024 period. The adjusted R-squared of 0.591 in the OLS regression model, anchored by four significant predictors encompassing fiscal allocation, infrastructure expenditure, institutional capacity, and community participation, confirms that both the quantum and quality of village fund governance matter for welfare outcomes. The farmer welfare index improved from 48.6 in 2019 to 64.3 in 2024, while rural poverty rates declined from 9.2 to 7.9 percent, representing tangible progress attributable in part to village fund investments.

Nevertheless, the moderate effect sizes and the structural lag between fiscal disbursement and welfare improvement documented in this study indicate that current fund governance arrangements are not operating at their potential frontier. The persistent underinvestment in productive empowerment programs relative to physical infrastructure, combined with governance capacity constraints at the village level, constitutes the primary binding constraint on impact maximization. The findings suggest that policies should integrate infrastructure development with capacity-building and community engagement, supported by stronger monitoring and accountability, to maximize welfare gains. However, reliance on secondary data limits the analysis, constraining household-level insights and the ability to draw strong causal conclusions. Future research should employ primary data collection methodologies, including structured household surveys and key informant interviews, to disaggregate welfare effects across farmer demographic categories and validate the mechanisms identified in this secondary-data analysis. Longitudinal primary data would also enable more robust causal inference through quasi-experimental research designs.

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