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Village Fund and Sustainable Development Performance in East Java

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ABSTRACT

The effectiveness of village funds in fostering accelerated welfare in rural areas has been a subject of scholarly debate in Indonesia. Concerns arise from the inadequate capacity of village officials to manage these funds effectively. Furthermore, external challenges, such as the limited ability of local communities to participate in village development planning, exacerbate the issue. Rather than promoting rapid economic growth and improved welfare, the mismanagement of village funds often leads to inefficiencies. This study examines the potential of village funds to enhance sustainable development performance, hypothesizing that when managed efficiently, these funds can stimulate sustainable progress. To examine this hypothesis, the study employs Data Envelopment Analysis (DEA), by using WinDEAP software to assess the efficiency levels of village funds. Due to limitations in data availability, we purposively selected and analysed 131 villages from a total of 8,494 villages in East Java. The results reveal that only 21 villages, or 16,0 percent, achieved a satisfactory efficiency (εp = 1), while 110 villages, or 83,9 percent did not. This finding has broad implications for implementing village decentralization, and the government needs to improve policies and continuously monitor village funds.

Introduction

In the 2022 Sustainable Development Goals (SDGs) Implementation Report, the Ministry of National Development Planning of the Republic of Indonesia (2023) reported that, of the 224 available SDG indicators, only 138 (62%) have achieved their respective targets, while 31 indicators (14%) have demonstrated a positive trajectory toward improvement. It implies that approximately 76 percent of the

indicators have demonstrated progress. However, this situation highlights that Indonesia is facing significant challenges in achieving the SDG targets by 2030. The data suggest that achieving the SDGs requires concrete actions to establish more effective and democratic institutions (Glass & Newig, 2019; Reverte, 2022), improved governance systems (Yandri et al., 2021), high-quality public administration (Meuleman, 2021), and supportive, pro-poor public policies (Fabrizio et al., n.d.).

To address those challenges as mentioned above, the Minister of Villages, Development of Disadvantaged Regions, and Transmigration of the Republic of Indonesia issued Regulation No. 21/2020, subsequently amended to Regulation No. 6/2023—this regulation provides general guidelines for village development and community empowerment. The regulation's preamble emphasizes a policy focus on accelerating the achievement of the SDGs, with an emphasis on the 17 targets. This policy underscores the critical role of villages in contributing to national SDG objectives, mainly through environmental and economic initiatives supported by village funds (Ronaldo & Suryanto, 2022).

The Indonesian Government Regulation No. 43 of 2014 concerning Village Funds stipulates that village funds are sourced from the State Revenue and Expenditure Budget (APBN) and allocated to villages via the Regency/City Regional Revenue and Expenditure Budget (APBD). These funds support village governance, development, community capacity-building, and empowerment initiatives. In practice, village funds are utilized to address various developmental challenges categorized into three domains: social, economic, and environmental. These domains closely align with the three foundational pillars of the SDGs.

Since 2016, village funds have been distributed to all villages in Indonesia through district governments. By 2023, the total allocation for village funds is projected to exceed IDR 65 trillion, reflecting an average annual increase of approximately 9.5 percent (Figure 1).

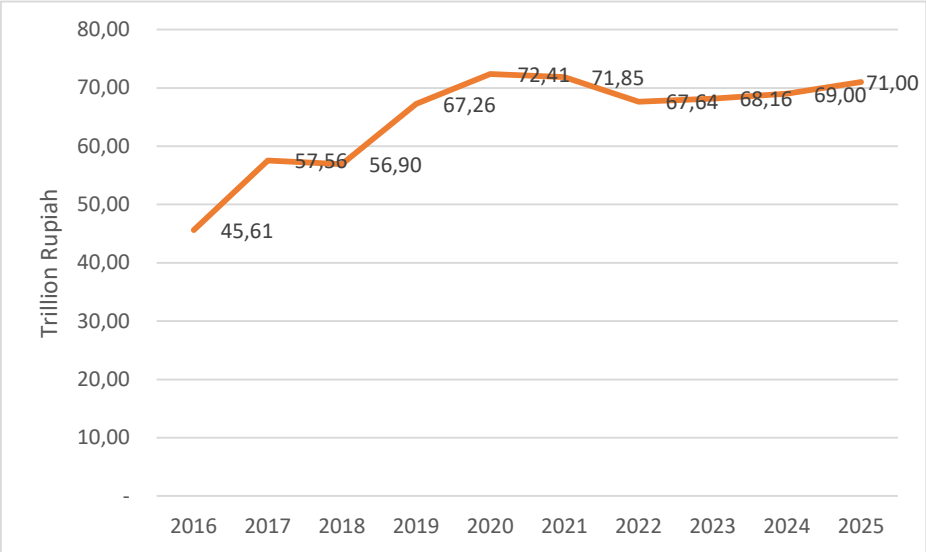

Figure 1. Total Village Fund Allocation in Indonesia
Source: BPS, 2024

Several studies have highlighted the impact of village funds on rural development. For instance, Saragi et al. (2021) found that village funds have contributed to a 15 percent reduction in poverty in the village. Similarly, Setiawan et al. (2020) reported that village funds have increased household consumption in rural communities and fostered economic growth. Additionally, data points to a regional convergence effect when village fund are distributed, with less developed villages growing more quickly than more established ones. Hartojo et al. (2023) observed that village welfare increased by 19 percent after receiving village funds compared to pre-village funds levels. This improvement is attributed to government-led empowerment programs funded by village funds.

Other studies have also demonstrated that village funds play a significant role in promoting economic activities in rural communities. For example, village funds support the development of local business enterprises (Badarudin et al., 2021), the establishment of tourist villages (Jaya et al., 2022; Utami et al., 2023), and the construction of essential village infrastructure, including bridges, agricultural facilities, village roads, and sanitation systems (Nugroho et al., 2022). Additionally, village funds have been utilized to finance conservation and reforestation initiatives aimed at enhancing environmental sustainability (Watts et al., 2019).

However, a number of studies show that village funds mostly support the expansion of village-owned businesses, with comparable growth trends seen in Java and non-Java locations. Despite this rapid growth, the utilization of village-owned enterprises remains limited, and there is no substantial evidence to suggest that these enterprises have significantly expanded employment opportunities for villagers (Arifin et al., 2020).

Many village chiefs in the government have been linked to corruption scandals. According to Indonesian Corruption Watch (ICW), there was a notable surge in these instances from 2015 to 2017, with 15 cases in 2015, 32 cases in 2016, and 65 cases in 2017. These situations were primarily caused by village chiefs abusing their power and local residents not properly monitoring village finances (Irfani, 2019). Widodo (2017) attributes the issue to weak democratic capacity, influenced by internal and external factors, including political culture, the legal framework, and the role of political actors and institutions within village governance.

Drawing on the aforementioned studies, scholars seem have expressed skepticism regarding the effectiveness of village funds in promoting rapid welfare improvement. This is primarily attributed to the insufficient capacity of village officials to manage the allocated funds effectively. Additionally, external challenges arise from the limited capacity of local communities to actively participate in village development planning. Consequently, rather than driving swift economic growth and welfare, village funds often lead to inefficiencies, resulting in minimal impact on poverty reduction and the narrowing of inequality. Village funds tend to be underutilized, with insignificant tangible progress in addressing these issues.

This study examines the following research question: How can village funds effectively promote sustainable development performance? The research is

grounded in the hypothesis that village funds have the potential to stimulate sustainable development efficiently. As such, this investigation presents a novel perspective on the issue and offers a methodological approach that can serve as a reference and consideration for practical policymaking.

Literature Review

In several development economics textbooks, the concept of sustainable development still refers to the definition of the World Commission on Environment and Development (WCED), which is "a development pattern that meets the needs of the present generation without jeopardizing the ability of future generations to meet their own needs" (WCED 1987). Ten years later, Elkington (1997) introduced the concept of "triple bottom lines" (social, economic, and environmental), which was then used as a basic concept to interpret the concept of sustainability. Each concept is then compiled into some specific indicators that, on the way, become a measure of performance for all countries in the world to achieve it. The Sustainable Development Goals were then formally set at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. In this case, the countries involved agreed to achieve these targets by 2030.

The Government of Indonesia then responded to all these dynamics by adding another Presidential Regulation No. 111/2022 of the Republic of Indonesia, which updates Presidential Regulation No. 59/2017 on the same topic and focuses on the Implementation of the Achievement of Sustainable Development Goals. After that, Bappenas followed up by issuing the Decree of the Minister of National Development Planning Number KEP.136/M.PPN/HK/12/2021 concerning Determining the National Action Plan for SDGs for 2021-2024.

Although the concept is used as the main reference in empirical research, it has not been considered final and has become a debate among academics, especially for specific and local cases (Seghezzo, 2009). Moreover, various research reports show that the issue of sustainability has shifted from a global perspective to a meso, local, regional, and even sectoral perspective (Finco & Nijkamp, 2001; Smith, 2007; Rydin et al., 2010).

Based on these theoretical situations and dynamics, the government of the Republic of Indonesia considers it necessary to achieve the SDGs targets in a smaller and specific regional context, namely, villages. As reviewed in the background section, the government concretized it by establishing Regulation No. 21/2020, which was later changed to Number. 6/2023. With these regulations, the achievement of the SDGs then gets its legal backing and, at the same time, its instrument, namely, village funds (Ronaldo & Suryanto, 2022). The village government follows up by intervening in programs and activities through data collection on poor groups and providing economic stimulation assistance, such as necessities (Zaini et al., 2021).

Especially in Asian countries, the practice of village revitalization is not a new thing. Japan, for example, has revitalized villages to cope with economic decline

through strengthening community independence in villages (Knight, 1994). Similarly, Thailand has been implementing fiscal policy in the form of transfers to rural areas since 2001 (Boonperm et al., 2013), which has affected attempts to reduce poverty. In this regard, the Thai government has actively intervened in villages through massive fiscal transfers in the hope that these villages will grow rapidly. In addition, the intervention is expected to encourage structural change and more equitable income redistribution (Fritz et al., 2021).

However, challenges still arise afterward, particularly the absence of village policies to support the SDGs concretely, especially in environmental conservation (Assajid et al., 2024). Phasa (2024), for example, also found that the implementation of the SDGs in Pandau Jaya Village has not been running optimally due to the lack of resources in the village, especially funds. Another problem is the weak participation of the community in development planning in villages (Ginting et al., 2023), even though village funds are not only economic tools, but also social tools in increasing community participation. In addition, development planning patterns in villages still ignore the issue of inter-village collaboration (Harsanto & Wahyuningrat, 2024), even though this collaboration will impact the strengthening of the village.

Therefore, good governance must be the basis for spurring the performance of village government. Community participation, as one of the components, must be more extensive to produce good governance in the village (Handayani et al., 2023). Ostrom (1990) said that governance is "a way for society to manage political, economic, and social problems." The World Bank defines governance as "the process through which state and non-state actors interact to design and implement policies within a given set of formal and informal rules that shape and are shaped by power) designs and implements policies in formal and informal rules that are formed and shaped by authority" (World Bank 2017). From the perspective of the new paradigm of rural development (Van Der Ploeg et al., 2000), rural development must be able to take advantage of endogenous factors by paying attention to key principles, including local community initiative and participation, specific resources, and the limitations of existing capacity. The factors identified by Van Der Ploeg et al. (2000) are relevant to the criteria for effective village fund utilization. According to the Regulation of the Minister of Home Affairs No. 113/2014, several indicators for assessing the effectiveness of village funds include transparency, accountability, participation, and discipline in budget execution. Bajuri (2024) stated that effectiveness pertains to the capability of the village government to realize the financial allocation from village funds for the implementation of specified programs, as compared to predetermined objectives, while considering the expected actual value. In this context, the expected value of effective village fund management is the achievement of the village SDGs targets (Permatasari et al., 2021).

Research Methods

We apply Data Envelopment Analysis (DEA) to evaluate the efficiency level of village funds. The use of DEA for efficiency analysis has been applied by several scholars in their research, such as a study conducted by Dong & Featherstone (2007), which evaluated the efficiency level of rural cooperatives in China, or Liu et al. (2013), which evaluated Taiwan's agricultural technical efficiency. Although previous studies have been widely conducted in China, the structural characteristics and institutional challenges of villages in Indonesia share several similarities, such as reliance on central government transfer (Lei, 2023), variation in local capacities, and comparable development objectives. Therefore, the DEA approach remains relevant, albeit with necessary contextual adaptations. In the context of village development, DEA not only measures efficiency but also helps identify benchmark villages that can serve as models for others to learn from and improve their performance.

DEA offers a piece-wise linear approximation of the production frontier. DEA has become a popular technique for measuring and evaluating performance. It has been successfully applied identifying benchmarking partners in situations where multiple inputs and outputs occur (Wöber, 2006). DEA allows analysis with multiple inputs or outputs. Technical efficiency measurement is carried out through a decision-making unit (DMU). The effectiveness of the DMU is then measured through the concept of efficiency or productivity, which is the ratio of total output to total input. The results of the DEA calculation will produce three possibilities, which are a constant return to scale (CRS/ εp = 1), an increasing return to scale (IRS/ εp > 1), and a decreasing return to scale (DRS/ εp < 1). CRS is an assumption used in efficiency analysis, which means that if all inputs are increased by a certain proportion, the outputs will increase by the same proportion. It implies that villages are being compared under the premise that they operate at an optimal scale, and that differences in efficiency are due to how well inputs are converted into outputs—not due to size advantages or disadvantages. IRS refers to a production condition where increasing all inputs by a certain proportion result in a more than proportional increase in output. DRS occurs when increasing all inputs by a certain proportion result in a less-than-proportional increase in output. The general formula of DEA analysis as described in equation (1) to (3). In this paper, we used the Win4DEAP software to operationalize the analysis. The use of Win4DEAP is justified by its capability to handle data with differing measurement units.

$$(jp) = \frac{\sum_{r=1}^{t} = 1 u_r y_{rjp}}{\sum_{i}^{m} = 1 v_i x_{ijp}} \quad (1)$$

With constraint:

$$\frac{\sum_{r}^{t} = 1 u_r y_{rj}}{\sum_{i}^{m} = 1 v_i x_{ij}} \leq 1, j = 1, \ldots, n, \quad (2)$$

ur, vi ≥ ε, Ãr and i (3)

For this research, as a sample we analyzed 131 villages from a total of 8,494 villages in East Java, a province that indeed has the most significant number of villages in Indonesia (Figure 2). The sample size is considered sufficiently representative of the population, as Juanda (2009) states that a minimum of 30 observations in a sample tends to approximate a normal distribution, indicating that such a number can adequately reflect the characteristics of the population. The villages we analyzed were taken purposively considering that (1) the village had received transfer funds from the central government through the respective district governments and (2) data availability. Information on village representation in each district is presented in Table 1. The data we analyzed is the 2023 expenditure realization data.

Figure 2. East Java Province Administration Map
Source: Regional research and development agency East Java Province, 2023.

In terms of demographics, the population reached 37 million people (2023), making it the province with the second largest population after East Java, which reached 49 million people. However, the biggest challenge for East Java is the

relatively high poverty rate, which reached 9.76 percent (2023), higher than the national poverty rate of 9.03 percent in the same period. Given this context, we consider the selection of East Java Province to be appropriate for observation.

In 2023, East Java received a transfer of village funds from the central government of around Rp. 8.1 trillion Rupiah, which was then allocated to all villages through the district/city government. The details of the allocation of village funds to East Java are presented in Table 1.

Tabel 1. Village fund allocation to East Java Province (2023)

No.	District	Village fund		% of total distribution to RKD to total village funds in East Java	% Number of village samples observed
		Budget (Rp)	Total distribution to RKD* (Rp)		
1	Banyuwangi	224,082,023,000	229,305,443,700	2.81	0.65
2	Blitar	228,656,418,000	234,907,663,800	2.88	0.01
3	Bojonegoro	395,962,330,000	406,511,827,625	4.98	10.46
4	Bondowoso	218,497,440,000	224,397,376,800	2.75	0.65
5	Gresik	309,991,419,000	318,788,864,400	3.90	3,.27
6	Jember	317,667,883,000	322,996,582,400	3.96	2.61
7	Jombang	307,473,648,000	315,572,884,000	3.86	1.31
8	Kediri	372,386,307,000	381,287,893,345	4.67	1.31
9	Lamongan	407,204,635,000	419,493,302,059	5.14	3.27
10	Lumajang	212,912,011,000	217,484,142,000	2.66	0
11	Madiun	191,091,276,000	195,638,803,500	2.40	0
12	Magetan	185,929,926,000	191,794,890,000	2.35	0.65
13	Malang	452,532,871,000	462,622,095,000	5.67	4.58
14	Mojokerto	286,840,742,000	294,196,057,060	3.60	7.19
15	Nganjuk	264,423,074,000	271,044,968,300	3.32	1.96
16	Ngawi	229,781,332,000	235,855,938,000	2.86	5.23
17	Pacitan	167,205,216,000	171,988,042,800	2.11	3.27
18	Pamekasan	197,259,886,000	202,286,998,000	2.48	0
19	Pasuruan	341,926,186,000	349,825,662,500	4.28	1.31
20	Ponorogo	255,901,720,000	263,442,374,810	3.23	0.65
21	Probolinggo	336,014,953,000	341,772,958,956	4.19	0
22	Sampang	224,094,810,000	225,435,054,900	2.76	0
23	Sidoarjo	315,057,014,000	322,178,934,000	3.95	1.96
24	Situbondo	147,780,620,000	150,869,238,300	1.85	1.96
25	Sumenep	350,788,483,000	359,620,825,800	4.40	1.96
26	Trenggalek	161,879,416,000	165,882,571,000	2.03	8.50
27	Tuban	299,100,896,000	306,929,121,300	3.76	33.33
28	Tulungagung	244,856,659,000	251,734,117,000	3.08	2.61
29	Bangkalan	304,577,576,000	310,628,711,997	3.80	0
30	Kota Batu	20,156,318,000	20,668,338,000	0.25	0
Σ		**7,972,033,088,000**	**8,165,161,681,352**	**100**	**100**

*Source: sid.kemendesa.go.id, 2023; annotation: *RKD is village cash account*

The village government's realization of expenditures in the Village Revenue and Expenditure Budget is how we assess the village's expenditure allocation. We analyzed five input components representing the realization of expenditures in the sectors of village governance, infrastructure development, community development, community empowerment, and disaster management, in accordance with the provisions outlined in the Ministry of Home Affairs regulation concerning the 2023 Village Fund allocation. It refers to the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration Number 7 of 2023 concerning the Detailed Priorities for the Use of Village Funds.

The data measurement unit for the input components is in million Rupiah. We divide the output into three main components: the social, economic, and environmental sectors, which represent key dimensions of the Sustainable Development Goals (SDGs). Since 2020, the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration of the Republic of Indonesia has regularly produced aggregated data in these three domains, which we use to estimate the output components.

In practice, these are measured through the Social Resilience Index, Economic Resilience Index, and Ecological Resilience Index, which are regularly published by the Ministry. These indices represent the final outcomes of village-level SDG achievements and can be considered as output variables in the DEA model. The data in the social, economic, and environmental domains contain various indicators of development performance at the village level. The unit of measurement for each indicator is presented in Table 2.

Table 2. Data for analysis of village expenditure efficiency on village development

No	Data	Annotation	Measurement
Input			
1	Expenditure on government administration	All Expenditure as a source of financing for the implementation of village authority is the obligation of the village government in a certain year.	Million Rupiah
2	Expenditure on infrastructure development	Expenditure on village infrastructure development, such as bridges, improvement of sanitation facilities, trenches, etc.	
3	Expenditure on community development	It includes salaries for village security personnel, national holiday commemoration activities,	

No	Data	Annotation	Measurement
Input			
		village cadet reef development, etc.	
4	Expenditure on community empowerment	Expenditure on empowerment includes training village health cadres, organizing village-level cultural activities, religious teacher incentives, etc.	
5	Expenditure on disaster management	It includes expenditure on evacuating people affected by disasters, temporary shelters, etc.	
Output			
6	Social security index (IKS)	Includes education, health, social capital, and settlement.	
7	Economic security index (IKE)	Includes on increasing the diversity of community production, access to trade centers and markets, access to logistics, access to banking and credit, and regional openness.	%
8	Environmental security index (IKL)	This includes improving environmental quality, handling natural disasters, and responding to disasters.	

Results and Discussion

As an initial explanation, we begin by describing our findings based on the components illustrated in Figure 3. The blue dots represent the actual positions of the observed villages, based on the input they used and the output they produced. The orange dots indicate projected positions for inefficient villages. This implies that if a village is located far from the efficiency frontier and has a projection point above its current position, it should be able to produce higher output with the same level of input in order to become efficient.

The grey line represents the efficient frontier—the maximum achievable output for a given level of input. This is a distinctive feature of the input-oriented DEA model, which aims to minimize input for a given output level. The frontier

reflects the fundamental principle in DEA analysis, known as the envelopment theorem, which explains how the optimal value of an optimization problem varies when certain parameters are altered.

In this context, we found that many villages (represented by blue dots) are concentrated in the area with low input values (< 0.2) and output levels ranging approximately between 2.2 and 2.8. This indicates that while many units operate with relatively low inputs, their output levels vary considerably. As shown in Figure 3, villages located on the grey line represent efficient units (efficiency score = 1). We found that only 21 villages, or 16.79 percent of the total, achieved full efficiency ($\varepsilon p = 1$). This situation reflects constant returns to scale (CRS)—the ideal condition that every village government should strive for.

Villages located on the efficiency frontier (grey line) are those that achieve the highest levels of social, economic, and environmental resilience with optimal use of available resources. In other words, these villages have successfully transformed village funds into the best outcomes for sustainable development. Assuming that village funds function as production factors that generate social, economic, and environmental sustainability in rural areas, doubling these production factors (inputs) would proportionally double the outputs produced.

We argue that several characteristics are commonly found among efficient villages. First, the planning of village fund allocation is well-targeted and aligned with local development needs. Second, there is a balanced distribution across expenditure sectors—for example, not only focusing on physical infrastructure but also prioritizing community empowerment. Third, there is synergy among the social, economic, and environmental aspects. Sustainable development requires a balanced integration of these three dimensions. The plot presented in Figure 3 provides a concrete visualization of the extent to which village funds are able to drive progress toward sustainable development outcomes.

Meanwhile, villages whose blue dots are located far from the grey line and have orange projection points represent inefficient units whose outputs can still be increased without any additional inputs. In this case, we found that 110 villages, or 83.96 percent, are in a Decreasing Returns to Scale (DRS) condition, with an average efficiency score of 0.594 (Figure 3). This situation arises when the percentage increase in output is less than the percentage increase in input. It indicates that the increase in the allocation of village fund expenditure is not proportional to the increase in development outcomes in rural areas of East Java Province—meaning that while input continues to grow, the corresponding gains in output become progressively smaller.

With the same level of input, these villages should have been able to achieve better resilience outcomes, as suggested by their projected positions. Several potential causes of inefficiency include: first, village fund expenditures are overly concentrated in one sector—such as physical infrastructure—while neglecting expenditure in areas like community empowerment or disaster management. This issue has also been documented in several studies, such as the report by Mustofa &

Afifah (2023). Second, limited institutional and human resource capacity at the village level. Third, development programs that are not outcome-oriented.

Our findings are contrary to some existing empirical facts. In the last five years, it was stated that the achievements of East Java Province in allocating village funds efficiently were recognized at national level. Based on the Decree of the Minister of Villages PDTT No. 400 of 2024, the number of Independent Villages in East Java has up massively to 4,019 villages—the highest number in Indonesia. In 2019, East Java Province was the only region that experienced such rapid progress, and the absorption of village funds was also the highest, at 99.6 percent. If we assume that the 83.96 percent of inefficient villages are representative of the total 8,494 villages (with a standard deviation average of 0.108, as shown in Table 3), then the number of villages considered inefficient in utilizing village funds reaches approximately 7,050 villages.

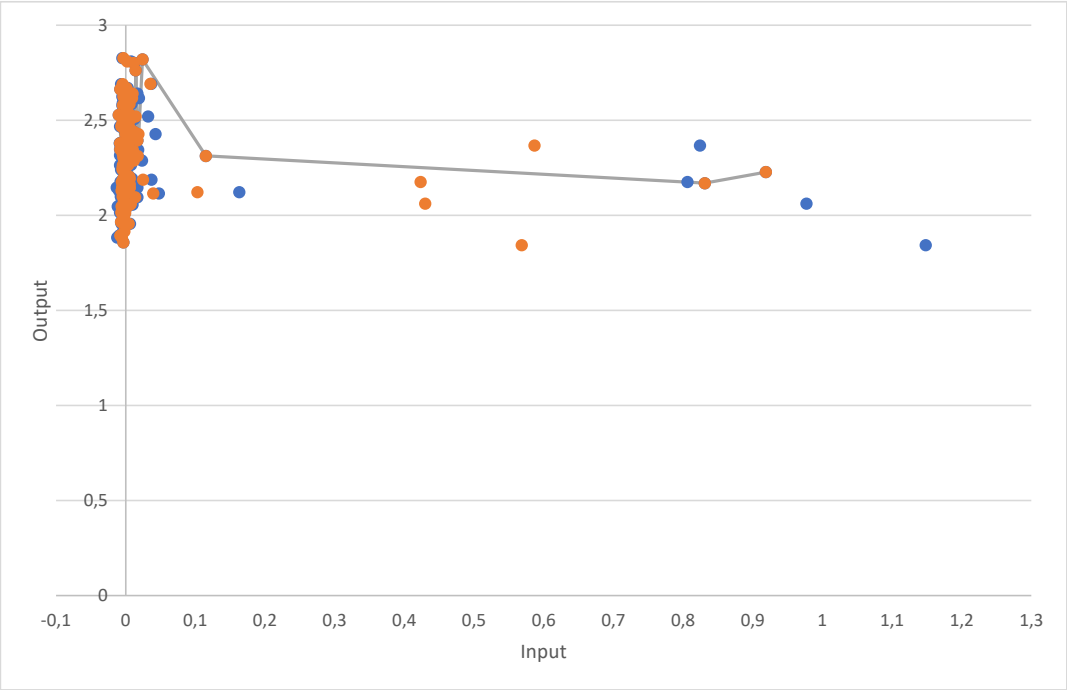

Figure 3. The Efficiency of Village Funds in East Java Province
Source: data proceeded, 2024

This result implies that there is still a disparity in development results between villages in East Java Province. The objective of village funding should be to lessen inequalities between communities and boost economic growth (Sambas & Saputro, 2024; Suseno et al., 2023). These findings have important implications for improving the quality of village decentralization policies and include the central government's monitoring of the quality of village fund expenditure on an ongoing basis. Villages, as the main actors of development, need to be supported in: (1) strengthening governance capacity; (2) conducting outcome-based program evaluations; and (3) enhancing synergy across expenditure sectors to achieve more comprehensive development outcomes.

Furthermore, ineffective village authorities, unregulated planning schedules, a lack of knowledge integration and learning procedures, and power struggles among stakeholders are other factors contributing to the inefficiency at the planning level (Akbar et al., 2019). In Pareto's perspective, an economy's resources are efficiently used when they are used in a way that has fully exploited all opportunities to make everyone better off. Handra et al. (2018) stated that an efficient village fund allocation allows for various alternatives and opportunities to improve village conditions so that the people in the village, especially the poor and vulnerable, are better off; dan (2) an efficient Village Fund allocation can facilitate improvement of conditions for all people in the village, without exacerbating other conditions.

Table 3. The efficiency, standard deviation, and standard error

No	District	Efficiency	Std. dev	No of sample	Std. error
1	Banyuwangi	0,76	-	1	-
2	Blitar	0,70	0,34	2	0,24
3	Bojonegoro	0,73	0,29	16	0,08
4	Bondowoso	0,66	-	1	-
5	Gresik	0,43	0,19	4	0,09
6	Jember	0,42	0,09	4	0,05
7	Jombang	0,71	0,18	2	0,13
8	Kediri	0,45	-	1	-
9	Lamongan	0,86	0,14	6	0,06
10	Lumajang	0	0	0	0
11	Madiun	0	0	0	0
12	Magetan	0,43	-	1	-
13	Malang	0,72	0,27	6	0,11
14	Mojokerto	0,68	0,20	14	0,05
15	Nganjuk	0,54	0,03	2	0,02
16	Ngawi	0,55	0,20	9	0,06
17	Pacitan	0,68	0,22	5	0,10
18	Pamekasan	0	0	0	0
19	Pasuruan	0,79	0,25	3	0,14
20	Ponorogo	0,5	-	1	-
21	Probolinggo	0	0	0	0
22	Sampang	0	0	0	0

No	District	Efficiency	Std. dev	No of sample	Std. error
23	Sidoarjo	0,56	0,12	3	0,07
24	Situbondo	0,52	0,21	3	0,12
25	Sumenep	0,81	0,05	3	0,03
26	Trenggalek	0,67	0,25	14	0,06
27	Tuban	0,65	0,24	51	0,03
28	Tulungagung	0,90	0,19	3	0,11
29	Bangkalan	0	0	0	0
30	Kota Batu	0	0	0	0

Source: data proceeded, 2024

In the ideal practice of fiscal decentralization, the government must be able to carry out efficient distribution and allocation functions. When efficient distribution and allocation functions are accompanied by improving the quality of government, it would be an effective strategy for reducing regional inequalities (Kyriacou et al., 2014). The increasing achievement of development, community welfare, and environmental sustainability marks it. Moreover, as studied by Dartanto & Nurkholis (2013), the dynamics of poverty vulnerability in Java including Bali are more due to educational attainment, the number of household members, physical assets, employment status, health shocks, the microcredit program, access to electricity, and changes in employment sector, employment status and the number of household members. Village funds can significantly reduce poverty and inequality rates and improve community welfare.

Conclusion

Sustainable development requires a balance among social, economic, and environmental dimensions. In the context of villages, this is even more emphasized, as the government has established specific development targets framed under a unified concept known as the Village SDGs. This implies that every village is expected to achieve the Village SDGs targets through the effective utilization of village funds.

This study examines whether village funds are being used efficiently to achieve the Village SDGs targets across social, economic, and environmental dimensions. We found that only 21 villages, or 16.0 percent, demonstrated good efficiency, meaning they had successfully optimized the use of village funds to achieve the best outcomes in sustainable development.

This finding has broad implications for the implementation of village decentralization, indicating that the government needs to strengthen policies and establish continuous monitoring mechanisms for village fund utilization. These

efficient villages can serve as replication models for others and as a reference for formulating national-level fund allocation policies.

However, a surprising finding is that 110 villages, or 83.9 percent, were found to be inefficient. This has important implications: these villages should consider reallocating their expenditures to more impactful sectors—such as community empowerment or disaster management.

Although our research has shown strong evidence of the inefficiency of village funds in generating development and socio-economic welfare in East Java, it still has limitations. One limitation is that we do not investigate the spatial character of each village, which is suspected to be the cause of their low efficiency level. Therefore, further research can investigate this more profoundly and more precisely. Methodologically, DEA approach helps identify villages that require assistance or intervention, as their fund allocations have not yielded proportional levels of resilience. The efficiency scores can serve as both a monitoring and evaluation tool for central and regional governments in future village fund allocation decisions.

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