
Comparison of Local Government Expenditure Efficiency: Eastern Indonesia vs Western Indonesia Before and After Covid-19

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Abstract

This study aims to (1) measure the government spending efficiency of provinces in Indonesia before and after the COVID-19 pandemic and (2) compare the government spending efficiency between Western Indonesia and Eastern Indonesia at these two times. The data used consists of 34 provinces in 2019 (before the COVID-19 pandemic) and 2022 (after the COVID-19 pandemic). In this study, the inputs are education spending and health spending. The outputs used are average years of schooling and life expectancy rate. The method used is Data Envelopment Analysis (DEA) based on Variables Return to Scale (VRS) with an output-oriented model. The results show that in Western Indonesia, four provinces were efficient before the COVID-19 pandemic and increased to 6 provinces after the COVID-19 pandemic. In Eastern Indonesia, there were three efficient provinces before the COVID-19 pandemic, which increased to 4 provinces that were efficient after the COVID-19 pandemic.

Furthermore, in the Eastern region, two efficient provinces also become peers for inefficient provinces before and after the COVID-19 pandemic. These two peers are Maluku and Gorontalo. Meanwhile, four efficient provinces in Western Indonesia that became peers were Yogyakarta, Riau Islands, Jakarta, and North Kalimantan before the COVID-19 pandemic. East Kalimantan became a peer only when the COVID-19 pandemic was over. Inefficient provinces should refer to their peers so that they can be efficient.

Keywords: government efficiency, education spending, health spending, Average Years of Schooling, life expectancy rate

1. Introduction

1.1 Introduce the Problem

As an institution responsible for the community's welfare, the government has an obligation to ensure that every citizen, regardless of geographical location, has equal access to public services in education and health. Education and health are two important sectors in the development of a

country. Through education and good health, the quality of human life will increase. Rambe (2020a) states that an indicator of community welfare is the quality of human life that can be achieved through education. Likewise, for health, Sunarya and Djameluddin (2023) explained that increasing government spending in the health sector can improve the quality of public health. Therefore, the allocation of government spending in these two sectors is the key to ensuring that budget allocation can equally meet the community's needs.

Furthermore, efficient spending allocation is a priority for the government in managing public funds because the available resources are limited. Each allocated fund should be able to produce optimal output by efficiently improving the quality of services in education and health. When budgets are allocated but need to be used effectively and efficiently, this impacts limited access to quality education services and proper health facilities. Rambe (2020b) revealed that the efficient use of public spending in the education and health sectors can improve the community's quality of life. The study explained that the provinces that have always been efficient during 2015-2018 are Jakarta, Banten, West Java, Central Java, and Yogyakarta. The five provinces are located in Western Indonesia. Meanwhile, in the Eastern Indonesia region, only so many provinces can become efficient every year. North Sulawesi and South Sulawesi were once efficient only in specific years, from 2015 to 2018.

The COVID-19 pandemic emphasizes that efficiency in public spending is important. According to Vebiani et al. (2022), the Pandemic has shifted the global direction and triggered an extraordinary response in various aspects of life. When the COVID-19 pandemic occurred, the government had to allocate more spending on health and education than the previous allocation. The increase in spending allocation is to improve the quality of health services and support the distance education system to stop the number of victims of COVID-19. However, after the COVID-19 pandemic ended, health and education spending allocations began to vary; some still prioritized spending on education and health (large spending allocations), and some began to prioritize other spending. If the spending allocation is efficient, the recovery process will be faster after the COVID-19 pandemic. Therefore, it is important to measure government efficiency in provinces in Indonesia's Western and Eastern regions, both before and after the COVID-19 pandemic.

This study aims to: (1) measure the efficiency of government spending in Western Indonesia and Eastern Indonesia both before and after the COVID-19 pandemic, (2) compare government spending efficiency between Western Indonesia and Eastern Indonesia both before and after the COVID-19 pandemic. Few studies compare government spending efficiency between Western Indonesia and Eastern Indonesia. This research is expected to provide valuable insights for policymakers and become a basis for the government to design more effective and efficient budget allocation policies in various regions in Indonesia.

1.2 Input in Efficiency Measurement

People in developed countries have higher education (Hibatumedina & Rambe, 2021). To achieve higher education, the government allocates education spending. Education spending

includes all costs incurred by the government and the private sector to support educational activities. It includes school operational costs, teacher wages, construction of educational facilities, and the provision of teaching materials and information technology. Saputra and Khoirunurrofik (2022) stated that the low correlation between increasing spending in the education sector and improving the quality of education is due to inefficiencies in government spending in this field. Therefore, investment in the education sector plays an important role. Adequate allocation of the education budget can expand access to education and improve the quality of teaching and student learning outcomes. Quality education contributes to economic growth and poverty reduction. Rizal et al. (2023) said that the efficiency of education spending is one of the strategic efforts to increase regional financial capacity in meeting the needs of basic facilities and infrastructure in disadvantaged areas.

Another input used in this study is health spending. Health spending is regional spending aimed at improving the quality of health and services, including medicines, health facilities, and health infrastructure (Hibatulmedina & Rambe, 2021). Until now, public services in the health sector needed severe attention from the central and regional governments regarding service performance and the budget needed (Ahyuni & Sutjipto, 2023). The spending refers to government expenditure shown to support the provision of public health services. The central government has formulated policies encouraging local governments to focus on compulsory government affairs, especially in providing essential services to the community. This policy is regulated in PP 2/2018 concerning Minimum Service Standards (SPM), a guideline for local governments in allocating public funds to meet the Minimum Service Standards (Prakasa & Suparyati, 2022).

In measuring government efficiency, many previous studies have used inputs such as total spending (Tran & Noguchi, 2020; Tirtosuharto, 2021). Other studies use inputs in the form of spending in several fields, such as spending on education, health, and infrastructure (Afonso et al., 2021; Ouertani et al., 2018), spending on education, health, and social protection (Lee et al., 2019; Lo Storto, 2016), as well as health, recreation, culture and religion, education, and social protection spending (Halaskova et al., 2018).

1.3 Output in Efficiency Measurement

The most commonly used output in measuring government spending efficiency is Average Years of Schooling (AYS), such as research conducted by Aditama et al. (2022), Rambe (2020a), and Hibatulmedina & Rambe (2021). Then life expectancy is also used as an output in the Havizd & Rambe research (2023), Hibatulmedina & Rambe (2021), and Iskandar & Saragih (2019). Another indicator that is often used as an input in measuring efficiency is the Human Development Index (HDI), which is explained by Pratama & Sumiyarti (2023), Harsono et al. (2024), and Rambe (2020b). Another indicator used is the poverty rate (Rambe et al., 2024).

The output that is often used to measure government efficiency is socio-economic indicators in the field of education (Mohanty & Bhanumurthy, 2020; Gavurova et al., 2017) and health (Febriani & Rambe, 2022; Olanubi & Osode, 2017; Rapiuddin & Rusydi, 2017)

However, some researchers prefer to use social issues, such as poverty and inequality, to reflect government performance (Fonayet, 2020). Judging from the method used to measure efficiency, DEA is still the favorite approach, even though some use other methods, such as FDH.

2. Method

This study aims to measure the spending efficiency of provincial governments in Indonesia, which will then be compared between Western Indonesia and Eastern Indonesia both before and after the COVID-19 pandemic. The western region of Indonesia consists of 21 provinces, namely Aceh, North Sumatra, West Sumatra, South Sumatra, Riau, Jambi, Bengkulu, Lampung, Jakarta, West Java, Central Java, East Java, Yogyakarta, Banten, Bangka Belitung, Riau Islands, South Kalimantan, East Kalimantan, West Kalimantan, Central Kalimantan and North Kalimantan. Meanwhile, Western Indonesia consists of 13 provinces, namely North Sulawesi, Central Sulawesi, South Sulawesi, West Sulawesi, Southeast Sulawesi, Bali, NTB, NTT, Maluku, North Maluku, Gorontalo, Papua, and West Papua.

The method used in this study is the Data Envelopment Analysis (DEA) method, with an output-oriented model based on the Variable Return to Scale (VRS) approach. DEA is an efficiency analysis technique that can compare the performance of various units or entities by considering multiple inputs and outputs. DEA can also be interpreted as a nonparametric method used to measure the relative efficiency of a decision-making unit called a decision-making unit (Rapiuddin & Rusydi, 2017).

The most commonly used method to measure efficiency is data envelope analysis (DEA), and this study will use DEA as an analysis tool to measure the efficiency of government spending. Setyono et al. (2021) said that DEA is a method that utilizes linear programming to assess the technical efficiency of an economic activity unit and compare it with other activity units. DEA analysis is designed to measure the relative efficiency of a production unit involving many inputs and outputs that are usually difficult to measure perfectly by other efficiency analysis techniques. The DEA is based on the assumption that each unit of economic activity will seek to maximize its efficiency (Kristiyanto & Widodo, 2017).

One of the advantages of DEA is its ability, through the DEAP program, to identify and provide benchmark information that specifically highlights efficient Decision-Making-UNIT (DMUs) serving as peers or references for inefficient provinces. This information is instrumental in understanding the contribution of efficient DMUs to improving the performance of less efficient DMUs, thereby offering strategic insights for enhancement.

In this study, there are two inputs, namely education spending and health spending. Both inputs are the total of the provincial government in IDR. Average Years of Schooling (AYS) and life expectancy rate are the outputs used. The data used in this study are data from 2019 (before the COVID-19 pandemic) and 2022 (after the COVID-19 pandemic) sourced from Indonesian statistics and the DJPK, Ministry of Finance of the Republic of Indonesia.

The government efficiency model in this study is: $\text{Max } E = \mu_1 Y_1 + \mu_2 Y_2 + \mu_0$ (1)

Subject to $v_1 X_1 + v_2 X_2 = 1$ (2)

$\mu_1 Y_1 + \mu_2 Y_2 + \mu_0 - (v_1 X_1 + v_2 X_2) \leq 0$ (3)

$\mu_{1,2}, v_{1,2} \geq 0$ (4)

Where Y_1 = Life expectancy rate; Y_2 = Average Years of Schooling (AYS); X_1 = health spending; X_2 = education spending E = coefficient value of DMU; $\mu_{1,2}$, = weight for output Y ; $v_{1,2}$ = weight for input X ; μ_0 = a term that can have a positive or negative value.

3. Results

3.1 Input Description

The inputs in this study are health spending and education spending. Figure 1 presents health spending data in Western Indonesia (21 provinces). Two colors will differentiate between health spending before and after the COVID-19 pandemic. Meanwhile, Figure 2 shows education spending in provinces in East Indonesia (13 provinces).

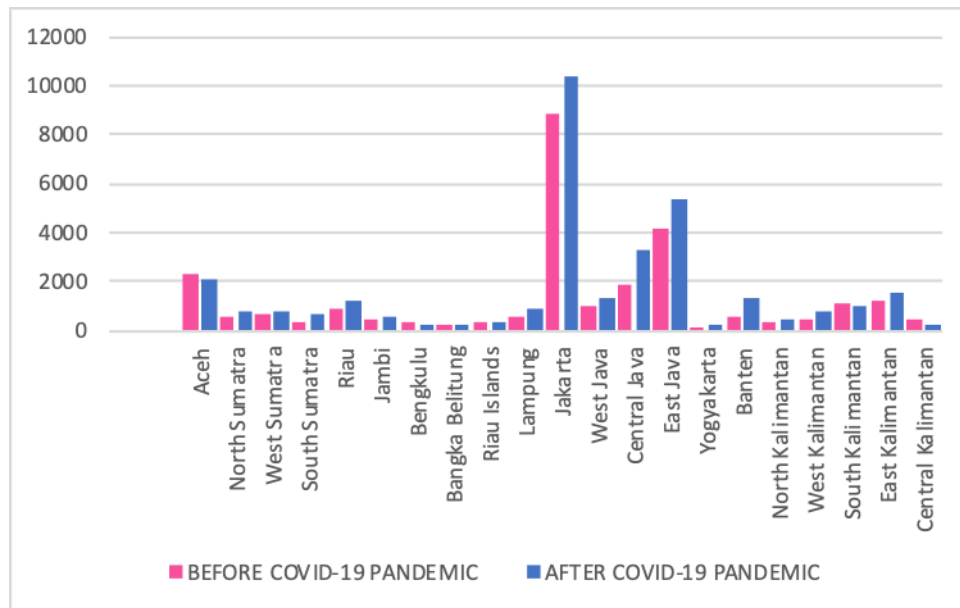


Figure 1. Health Spending in Western Indonesia Before and After COVID-19 Pandemic (in IDR Billion)

Source: Directorate General of Fiscal Balance

The average health spending in Western Indonesia is 1,196.68 billion rupiah, with the lowest spending in Yogyakarta at 176.18 billion rupiah and the highest in Jakarta at 8,894.09 billion

rupiah. After the COVID-19 pandemic, the average education spending increased to 1,378.10 billion rupiah. Jakarta remains the province with the highest spending, while the lowest spending shifted to Bengkulu at 249.99 billion rupiah. This average increase indicates additional budget allocations for health in most provinces, although there are decreases in some regions, such as Aceh and Bengkulu.

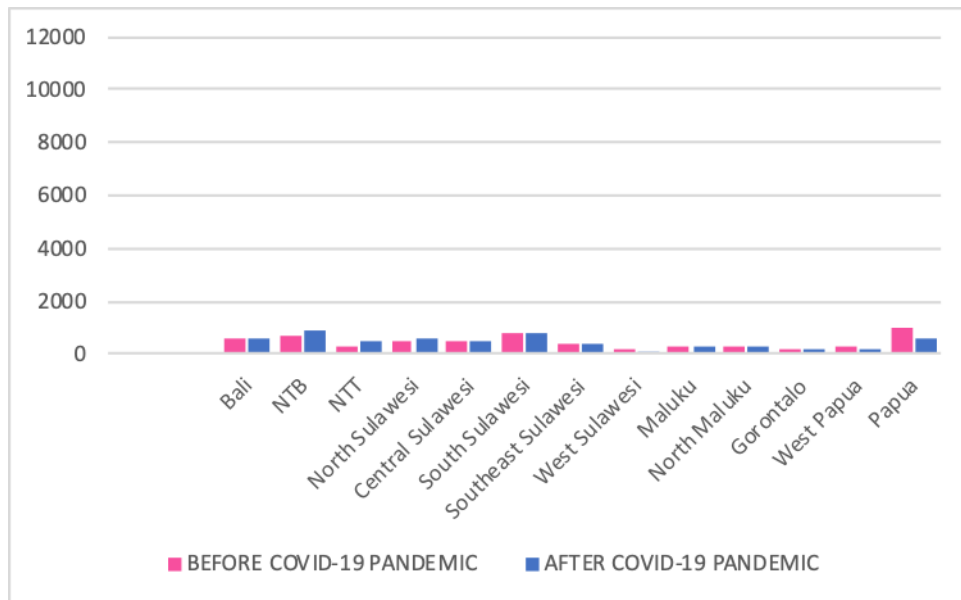


Figure 2. Health Spending in Eastern Indonesia Before and After COVID-19 Pandemic
 Source: Directorate General of Fiscal Balance, Finance Ministry of Indonesia.

Figure 2 illustrates the average Health spending in Eastern Indonesia. Compared to Western Indonesia, there is a similar pattern where some provinces experienced a significant increase after the COVID-19 pandemic (North et al., NTB, NTT, and North Maluku). Meanwhile, South Sulawesi, Papua, and West Papua experienced a decrease in health spending. In Figure 2, it can be seen that Papua occupies the lowest position in health spending after the COVID-19 pandemic and experienced a sharp decline. On the contrary, NTB showed a considerable increase and became the province with the highest health spending after the COVID-19 pandemic. The average health spending in Eastern Indonesia increased from 463.53 to 512.88 after the Pandemic, reflecting a better response to health needs after the COVID-19 Pandemic. Compared to Western Indonesia, which generally has high health spending, this shows a difference in resource allocation and health priorities between the two regions. It reflects a greater challenge in meeting health needs in Eastern Indonesia.

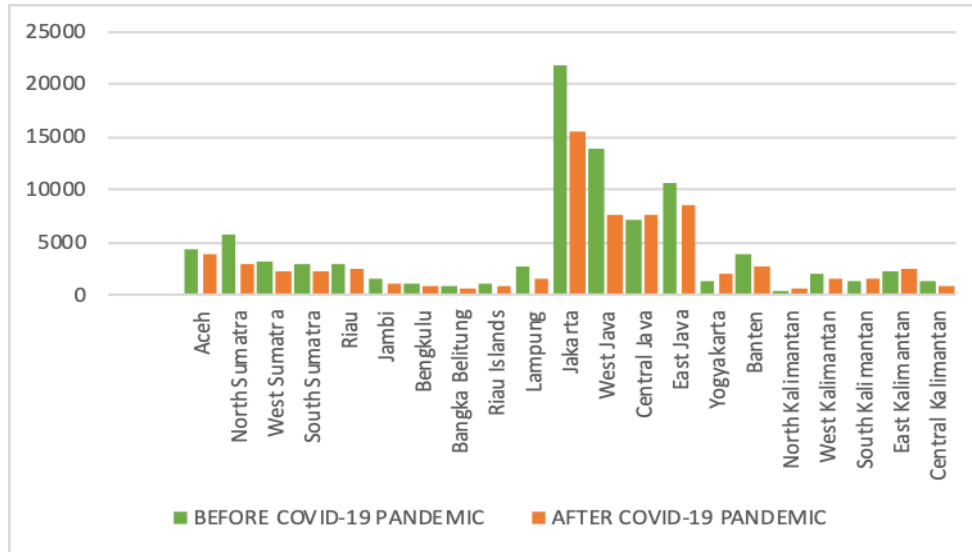


Figure 3. Education Spending in Western Indonesia Before and After COVID-19 Pandemic. Source: Directorate General of Fiscal Balance

Figure 3 shows that most provinces in Western Indonesia, such as Jakarta, experienced a decline in education spending after the COVID-19 pandemic. However, on the contrary, North Kalimantan has experienced an increase in education spending after the COVID-19 Pandemic. The average education spending in this region decreased from 4,579.47 billion rupiah before the COVID-19 pandemic to 3,413.48 billion rupiah after the COVID-19 Pandemic.

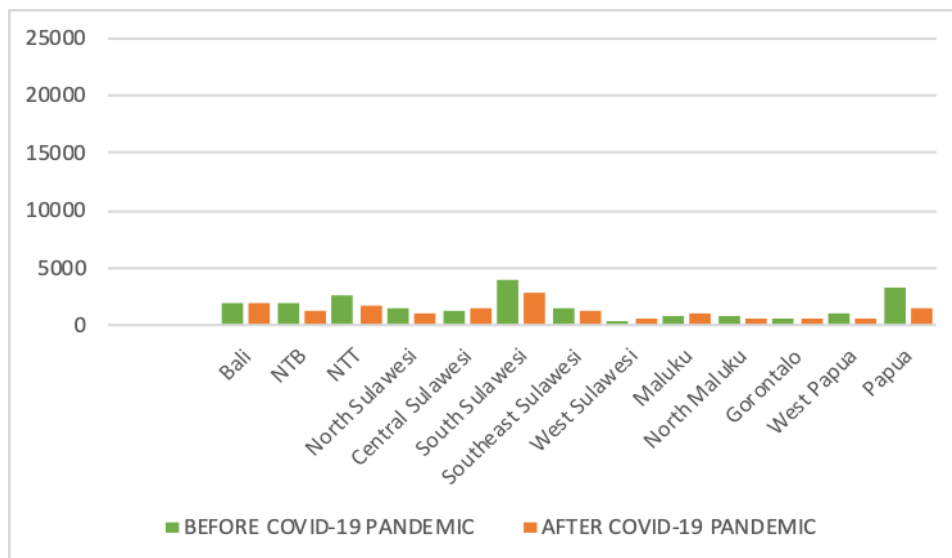


Figure 4. Education Spending in Eastern Indonesia Before and After COVID-19 Pandemic. Source: Directorate General of Fiscal Balance

Education spending in Eastern Indonesia before and after the COVID-19 pandemic is illustrated in Figure 4. South Sulawesi recorded the highest spending, and West Sulawesi recorded the lowest number. The average spending in Eastern Indonesia decreased from 1,664.04 IDR billion to 1,398.12 IDR billion. In comparison, education spending in Western Indonesia is higher than in Eastern Indonesia before and after the COVID-19 pandemic. Although the Pandemic caused a decrease in budgets in both regions, the allocation of education spending in Western Indonesia is still larger than in Eastern Indonesia.

3.2 Output Description

In an efficiency measurement, input is expected to produce optimal output. Optimal output refers to the maximum level of results or production that can be achieved by a unit through the effective utilization of available resources or inputs without any wastage. The outputs in measuring government efficiency in this study are life expectancy rate and Average Years of Schooling (AYS). The output is shown in Figure 5

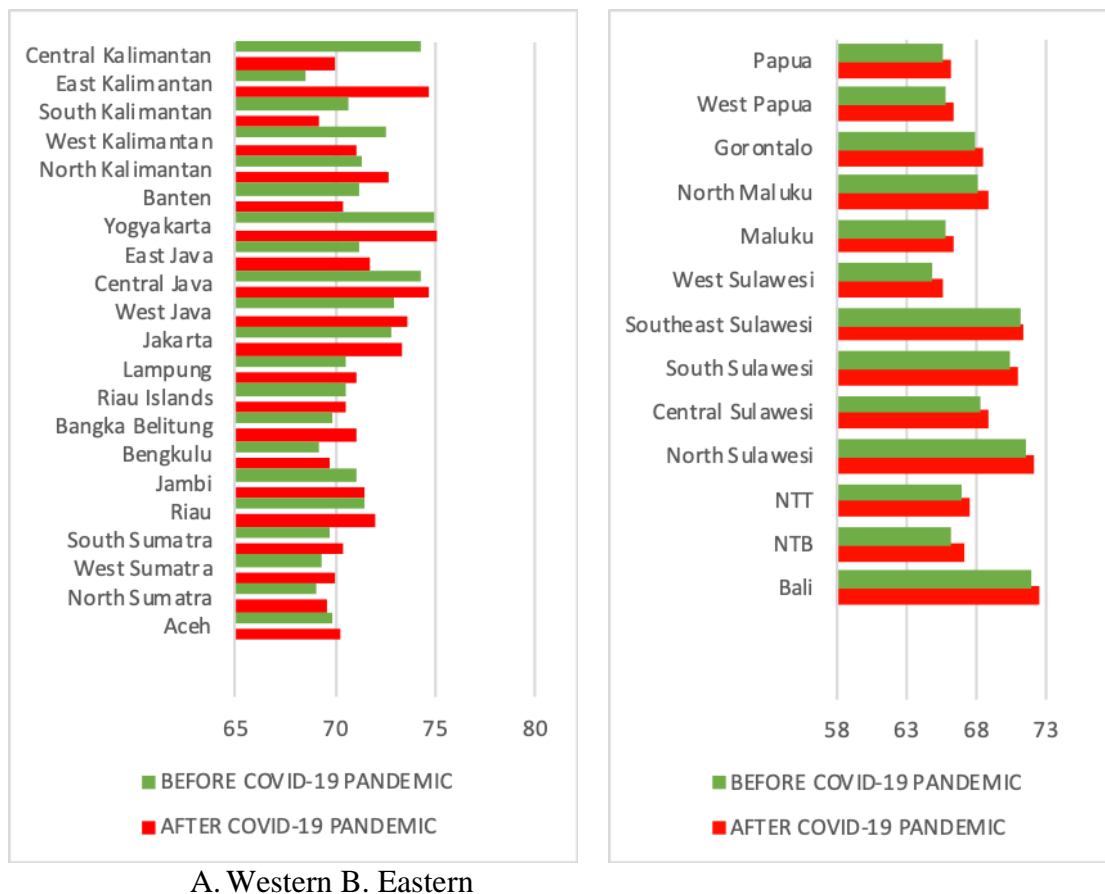
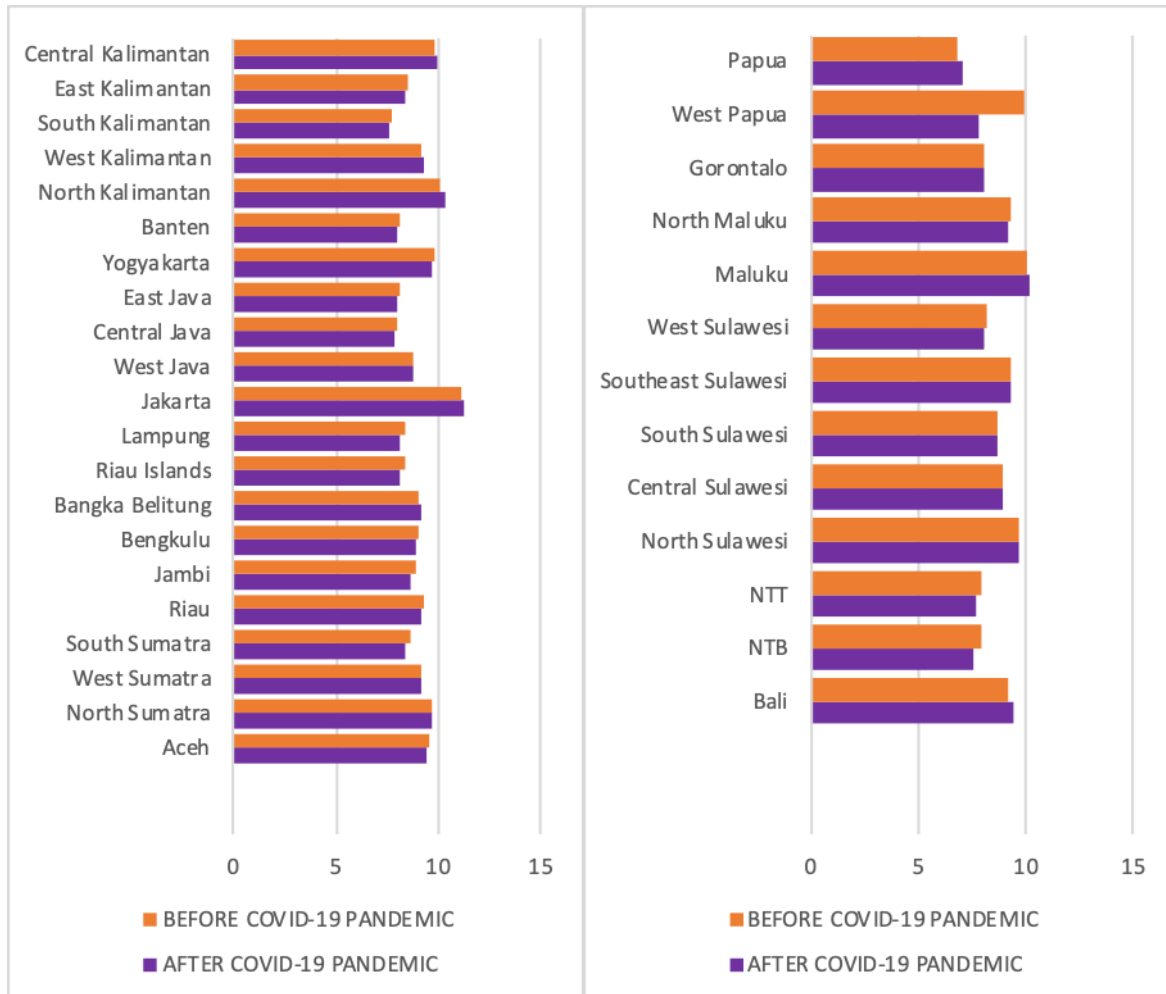


Figure 5. Life Expectancy in Western and Eastern Indonesia Before and After COVID-19 Pandemic. Source: Statistics Indonesia

Figure 5A illustrates the life expectancy rates in 21 provinces in Western Indonesia before and after the COVID-19 pandemic. Jakarta is the province in Western Indonesia with the largest health spending before and after the COVID-19 pandemic. However, the province with the highest life expectancy rate is Yogyakarta, which had a figure of 74.9 years before the pandemic and then increased to 75.1 years after. On the other hand, Bengkulu has the lowest life expectancy, which increased from 69.2 years to 69.7 years after the Pandemic. Thus, although Jakarta, East Java, and Central Java show the highest health spending in the western region of Indonesia, they only sometimes achieve optimal results in life expectancy. This emphasizes the importance of looking at the magnitude of the expenditure and how those resources are managed and allocated.

Figure 5B shows the life expectancy rate in Eastern Indonesia. Previously, health spending in Eastern Indonesia showed that North Sulawesi, Central Sulawesi, NTB), East Nusa Tenggara (NTT), and North Maluku experienced increased health spending. However, Figure 5B shows Bali and North Sulawesi have the highest life expectancy rates before the COVID-19 pandemic. On the other hand, West Sulawesi recorded the lowest life expectancy figures, followed by Papua, Maluku, and West Papua. After the COVID-19 pandemic, the highest life expectancy rate remains in Bali. A comparison between the two regions shows that Western Indonesia has a higher life expectancy than Eastern Indonesia both before and after the COVID-19 pandemic.



A. Western

B. Eastern

Figure 6. Average Years of Schooling in Western and Eastern Indonesia Before and After COVID-19 Pandemic.

Source: Statistics Indonesia

Furthermore, Figures 6A and 6 B describe the second output, Average Years of Schooling (AYS). It was explained that before the COVID-19 pandemic, Jakarta (11.11 years) was the province with the highest AYS in Western Indonesia, while South Kalimantan (7.8 years) had the lowest. After the COVID-19 pandemic, Jakarta still had the highest AYS (11.31 years), and South Kalimantan remained in the lowest position (7.59 years).

Meanwhile, Figure 6B explains that in East Indonesia, before the COVID-19 pandemic, Maluku had the highest AYS (10.03 years); on the other hand, Papua was the province with the lowest AYS (6.85 years).

Overall, AYS in Western Indonesia is higher than in eastern Indonesia. Before the COVID-19 Pandemic, the average AYS in the Western region was 8.96 years, and in the Eastern region, 8.46 years. After the COVID-19 pandemic, the western region showed a greater increase, with the AYS in the western region becoming 9.05 and 8.51 years in the eastern region. Thus, although both regions have experienced an increase in AYS, the Western region has a higher level of education than the Eastern.

Furthermore, this study uses the DEA method with an output-oriented model based on the Variable return to scale approach to measure the efficiency of government spending in each province. The results of measuring government efficiency are presented in Table 1.

Table 1. Efficiency Scores of Provincial Governments in Western and Eastern Indonesia Before and After COVID-19 Pandemic

No	Provinces In Indonesia	Before COVID-19	After COVID-19
1	Jakarta	1,000	1,000
2	Yogyakarta	1,000	1,000
3	Riau Islands	1,000	1,000
4	North Kalimantan	1,000	1,000
5	East Kalimantan	0,996	1,000
6	Central Java	0,991	1,000
7	West Java	0,973	0,987
8	Bangka Belitung	0,963	0,997
9	North Sumatra	0,960	0,959
10	Riau	0,954	0,960
11	East Java	0,950	0,960
12	Aceh	0,949	0,939
13	Jambi	0,948	0,978
14	West Kalimantan	0,942	0,955
15	Lampung	0,941	0,954
16	Bengkulu	0,934	0,998
17	Banten	0,932	0,933
18	South Sumatra	0,930	0,933
19	Central Kalimantan	0,930	0,968
20	West Sumatra	0,929	0,934
21	South Kalimantan	0,914	0,926
E 1	Maluku	1,000	1,000
A 2	Gorontalo	1,000	1,000

S T	3	West Sulawesi	1,000	1,000
	4	West Papua	0,993	0,940
	5	North Sulawesi	0,970	0,989
	6	Bali	0,961	0,973
	7	North Maluku	0,956	1,000
	8	Southeast Sulawesi	0,949	0,961
	9	South Sulawesi	0,940	0,947
	10	Central Sulawesi	0,912	0,927
	11	East Nusa Tenggara (NTT)	0,893	0,897
	12	Papua	0,876	0,890
	13	West Nusa Tenggara (NTB)	0,884	0,907
	Average Efficiency		0,955	0,965

Source: Data Processing Results

In Table 1, the yellow column indicates that the province is efficient. The average efficiency score before the COVID-19 pandemic was 0.955 and slightly increased to 0.964 after the pandemic. In other words, on average, government inefficiency has decreased in increasing the life expectancy rate and AYS in all provinces in Indonesia.

Below Is a bar chart designed to facilitate visualization of efficiency improvements and the average efficiency levels across regions.

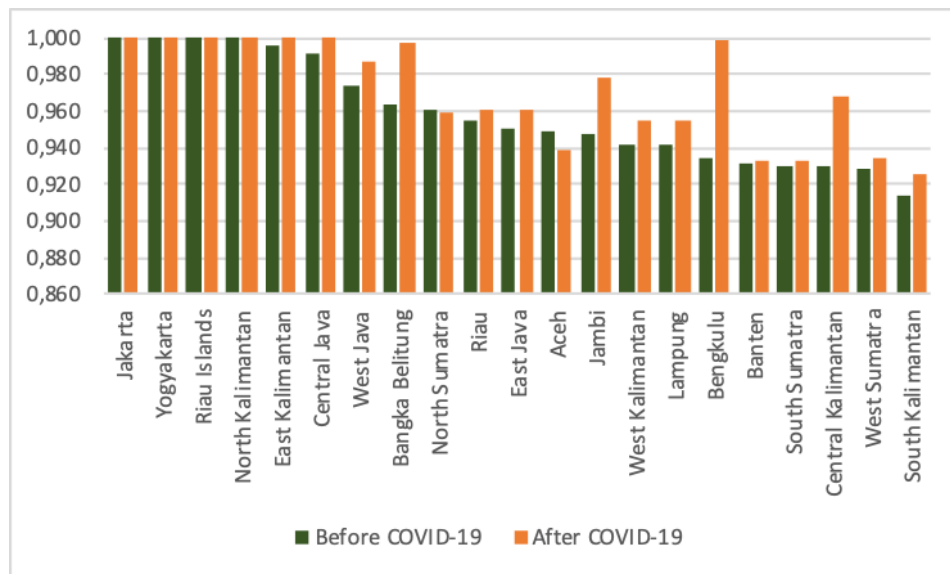


Figure7. Efficiency Scores of Provincial in Western Indonesia
 Source: Data processing Results

Figure 7 illustrates the average efficiency scores of each province in the Western region before and after COVID-19. These efficiency scores were calculated using the DEA method with a VRS approach, based on inputs of education and health spending and outputs in the form of life expectancy and average years of schooling.

The average efficiency in the Western region before COVID-19 was 0,959, while after COVID-19 it increased to 0,971. The significant difference between the two bars illustrates the impact of the pandemic on the efficiency of government resource allocation. This graph provides a comprehensive view of efficiency changes at the provincial level, showing how each province optimally utilized the available inputs in periods.

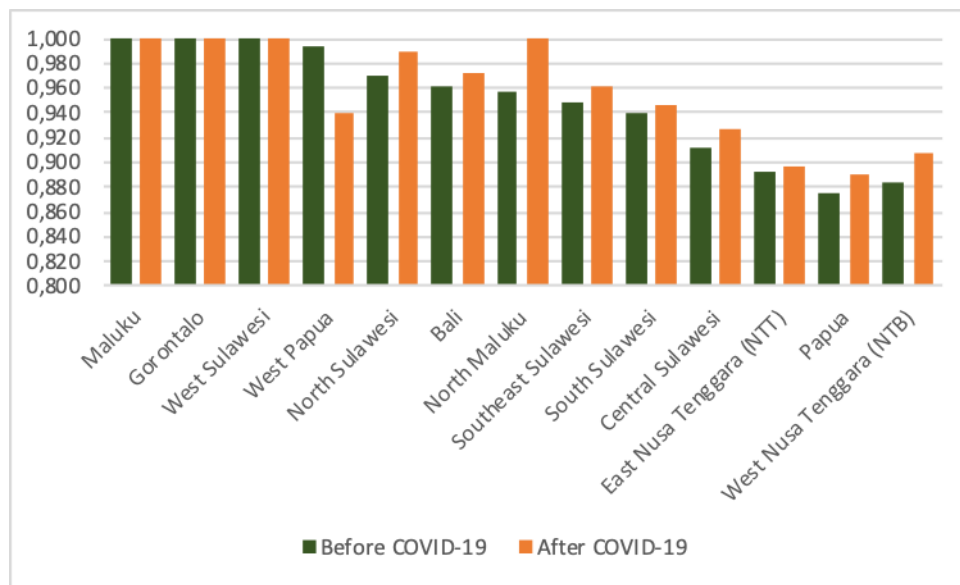


Figure 8. Efficiency Scores of Provincial in Eastern Indonesia
 Souch: Data processing Results

In Eastern, the average efficiency before COVID-19 was 0,926, while after COVID-19 it increased to 0,936. This reflects changes in the optimalization of government spending in the education and health sectors.

The comparison of efficiency between the Western and Eastern regions cannot be concluded solely based on averages, considering the significant difference in the number of provinces between the two regions. Therefore, to provide a more accurate and objective analysis, a percentage-based approach is necessary to acces the proportion of efficient provinces in each region, both before and after COVID-19. The comparison using percentages will be presented in Table 2.

Table 2. Comparison of Efficiency Scores Between Western and Eastern Both Before and After the COVID-19 Pandemic

Development of Efficiency Levels	Province	
	Western	Eastern
Province Remains Efficient	Jakarta, Yogyakarta, Riau Islands, and Noerth Kalimantan (19,05 %)	Maluku, Gorontalo and West Sulawesi (23,08 %)
Provinces with Increased Efficiency Scores, Become Efficient After the Pandemic	East Kalimantan and Central Java (9,52 %)	North Maluku (7,69 %)
Provinces with Increased Efficiency Scores, But Still Inefficient After the Pandemic	West Java, Bangka Belitung, North Sumatra, Riau, East Java, Aceh, Jambi, West Kalimantan, Lampung, Bengkulu, Banten, South Sumatra, Central Kalimantan, West Sumatra, South Kalimantan (71,43 %)	North Sulawesi, Bali, Southeast Sulawesi, South Sulawesi, Central Sulawesi, NTT, Papua, NTB (61,54)

Source: data processing results

Provinces in Eastern Indonesia generally have a higher level of efficiency compared to Western Indonesia. Most provinces in Western Indonesia were not efficient before the COVID-19 pandemic, but they were able to improve efficiency after the pandemic (71.43% of 21 provinces), but unfortunately, they are still inefficient. This shows that the province still has to work on optimizing its resources as a whole.

Meanwhile, in the Eastern region, 23.08% of 13 provinces, namely the provinces of Maluku, Gorontalo, and West Sulawesi, are able to maintain their position to remain efficient after the COVID-19 pandemic.

Thus, this comparison shows that success in efficiency is not only measured by the highest numbers but also by the ability of provincial governments to maintain efficiency over a longer period of time. This illustrates the importance of a comprehensive approach to the evaluation of public spending efficiency. Among them are sustainable processing and strategies that the province has implemented in Eastern Indonesia.

Furthermore, the DEA will provide recommendations for inefficient provinces to perform benchmarking to efficient provinces that are peers (Table 2).

Table 3. Provinces and Peer Count Summaries Before and After the COVID-19 Pandemic

Region	Before Covid-19 Pandemic		After Covid-19 Pandemic	
	Provinces	Peer Count	Provinces	Peer Count
Western	Yogyakarta	27	Yogyakarta	23
	Riau Islands	8	North Kalimantan	14
	Jakarta	6	East Kalimantan	9
	North Kalimantan	3	Riau Islands	6
Eastern			Jakarta	4
	Maluku	2	Gorontalo	3
	Gorontalo	1	Maluku	1

Source: Data Processing Results

Rambe (2020b) said that provinces that are always relatively efficient are not necessarily peers. In this study, four relatively efficient provinces before and after the COVID-19 pandemic in Western Indonesia were peers, namely Yogyakarta, Riau Islands, Jakarta, and North Kalimantan. Meanwhile, in Eastern Indonesia, only Gorontalo and Maluku are peers, while West Sulawesi are not peers, even though they are relatively efficient in measuring the provinces.

Table 2 explains the changes in the number of provinces that were inefficient before and after the COVID-19 pandemic. As part of the analysis of government spending efficiency, peer comparisons and benchmarks between provinces are important to see changes in provincial performance patterns. The data presented provides an overview of the provinces that are peers in assessing the efficiency of other regions, as well as the number of provinces that were inefficient before and after the COVID-19 pandemic.

Yogyakarta and Maluku showed consistency as a reference for efficiency in their regions before and after the COVID-19 pandemic. This indicates that these two provinces have relatively stable, efficient performance in the health and education sectors. On the other hand, there has been a significant peer change in Western Indonesia with the emergence of East Kalimantan and the increase in North Kalimantan after the pandemic.

The shift in the number of provinces referring to certain peers after the COVID-19 pandemic, especially in the West, can indicate a change in efficiency distribution among provinces. This indicates the effects of the COVID-19 pandemic on the health and education systems in various provinces, so several provinces that were not previously used as benchmarks are starting to stand out in terms of efficiency.

Western Indonesia had more inefficient provinces than Eastern Indonesia both before and after the Pandemic. This suggests that efficiency constraints in the health and education sectors are more common in the Western region, which may be caused by different challenges in terms of government or resource allocation.

4. Discussion

Efficiency occurs when an input is used to the bare minimum but produces an optimal output. In Eastern Indonesia, provinces such as Maluku, Gorontalo, and West Sulawesi have government spending that is reasonable compared to other provinces. These provinces produce optimal life expectancy rates and AYS so that these three provinces become efficient. After the COVID-19 pandemic, one more province became efficient in Eastern Indonesia, namely North Maluku.

The same thing happened in Western Indonesia, where provinces such as Jakarta, Yogyakarta, Riau Island, and North Sumatra were consistently efficient before and after the Pandemic. When viewed from spending, these provinces have expenditures that are reasonable compared to other provinces, except for Jakarta, which did have the highest spending in both periods. This province also shows a higher life expectancy rate and AYS than other regions. This shows that they can produce maximum results with relatively low inputs. Furthermore, East Kalimantan and Central Java became efficient provinces after the COVID-19 pandemic. Government spending in these two provinces is quite high. It is accompanied by a high life expectancy rate and AYS so that the two provinces can become efficient after the pandemic.

The study found that the provinces of Jakarta, Yogyakarta, Riau Islands, and North Kalimantan efficiently achieved life expectancy rates and AYS. This study supports the previous study (Rambe, 2020b), which stated that Jakarta and Yogyakarta could always efficiently increase Indonesia's life expectancy rate, AYS, and real per capita income during 2015-2018. This emphasizes the condition of the provinces of Jakarta and Yogyakarta, which have been efficient during 2015-2018, are still efficient in 2019, even after the COVID-19 pandemic is still efficient in improving the quality of human life.

Then, Seowondo et al. (2019) conveyed suggestions to policymakers in East Nusa Tenggara (NTT) to carry out an equitable distribution of health workers and health promotion program innovation. This indicates that allocation spending in the province needs to be carried out more efficiently. Likewise with South Sulawesi, Rapiuddin & Rusydi (2017) said that most regions/districts in South Sulawesi still need to be more efficient because there has been a waste of spending on education and health. However, an increase does not follow in facility services. This also confirms that NTT and South Sulawesi in this study are still on the path of inefficiency. Efficient provinces in the Western region tend to have a higher average years of schooling compared to other provinces. Jakarta recorded the highest average years of schooling at 11,11 years, followed by the Riau Island and Yogyakarta. These provinces optimally utilized their education budgets to achieve high average years of schooling, as evidenced by high output relative to the inputs used. This suggests that the spending in these provinces has been more

effective in improving educational indicators, particularly average years of schooling, even though some also managed to improve life expectancy.

Similarly, in the eastern region, such as Maluku, Gorontalo, and West Sulawesi, the results tend to be better on the average years of schooling indicator compared to life expectancy. Maluku has the highest average years of schooling, while Gorontalo and West Sulawesi also show a similar pattern, with a stronger focus on efficiency in education. This indicates that provinces in the Eastern region have been more effective in utilizing their spending to improve the education sector rather than health.

Conclusion

The comparison of efficiency between the western and eastern regions cannot be concluded solely based on averages. Therefore, a percentage-based approach is necessary to assess the proportion of efficient provinces in each region. The results of this study show that the provincial government in Eastern Indonesia is more efficient than in Western Indonesia. Although the average efficiency score in Western Indonesia is higher, the percentage of ratio measurement shows that Eastern Indonesia has a higher number than Western Indonesia. The average efficiency score in Western Indonesia before the Pandemic was 0.959, then 0.971. In Eastern Indonesia, the average efficiency score before the Pandemic was 0.949 and 0.956 after the Pandemic.

If calculated using the ratio, four provinces (19.05%) were efficient in western Indonesia before the COVID-19 pandemic, namely Jakarta, Yogyakarta, Riau Islands, and North Kalimantan. Meanwhile, in the Eastern, three provinces (23.08%) were efficient in Indonesia before the COVID-19 pandemic, namely Maluku, Gorontalo, and West Sulawesi. Then there are two provinces (9.52%) that are efficient in western Indonesia after the COVID-19 pandemic, namely East Kalimantan and Central Java, and there is one province (7.69%) that is efficient in eastern Indonesia after the COVID-19 pandemic, namely North Maluku.

The provinces in the West that have always been peers are Yogyakarta, Riau Island, Jakarta, and North Kalimantan. Meanwhile, in Eastern Indonesia, Gorontalo and Maluku have always been peers before and after the Pandemic. Therefore, provincial governments that still need to be more efficient should refer to their peer provinces as a model to achieve efficiency. Then, the government must design a budget policy more oriented to regional needs. This can be done by optimizing existing budgets and conducting stricter monitoring. The goal is to see how much allocation spending affects improving the quality of human life, such as Average Years of Schooling and Life Expectancy.

Recommendation

The government needs to design strategic programs to improve the average years of schooling in inefficient provinces. These measures could include strengthening access to education through the construction of school infrastructure, providing scholarships, training teachers quality and

accessibility of education, the average years of schooling, as one of the key output indicators, can be increased, thus creating better efficiency in the use if the education spending.

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