

Efficiency Analysis of Local Government Expenditures Based on Islamic Human Development Index: Evidence in Indonesia

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The purpose of this study was to analyze the efficiency of local government expenditure based on Islamic Human Development Index (I-HDI) in Local Government at the Indonesian's Province using Data Envelopment Analysis (DEA). DEA is a non parametric method that was developed to measure the level of efficiency compared to the Decision Making Unit (DMU). This method can measure the efficiency of a government entity by using multi-input and multi-output. DEA result also can be used to identify which input or output must be increased by Decision Making Unit (DMU) to reach optimum efficiency. The result from this study showed that the average of efficiency score in local government at Indonesian's Province is increasing from 2015 until 2018. This study also indicates that North Sumatera, East Java, and Yogyakarta's government spending were efficient in 4 years. While Bangka Belitung and West Papua achieve the lowest efficiency score, and should optimize input and increase the number of output to improve the efficiency. Moreover, the main source of inefficiency is in Life birth rate indicators.

Keywords: Government Expenditure Efficiency; DEA; Islamic HDI

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I. INTRODUCTION

In the Indonesian's reform era, there has been a paradigm shift in national development from the growth paradigm to an equitable distribution of sustainable development paradigm (Pamula 2012). This new paradigm demand to added the success indicators of national development which is not only about the growth rate of Gross Domestic Product (GDP), but also an increase in the Human Development Index (HDI). This chance was realized through a policy of regional autonomy and central-regional financial balance which began on January 1, 2001 (RI Financial Note 2002).

The implementation of regional autonomy policy begins with the ratification of Law number 22 of 1999 about regional government, and Law number 25 of 1999 about regional and central financial balance. To date, these two regulations has undergone several revisions until the last is Law Number 33 of 2004 about regional and central financial balance, and Law number 23 of 2014 about regional government. These ratified regulation aims to create independence aspect in the region, in order to accelerate the realization of community welfare trough improving services, empowerment, and participation.

Decentralization is an instrument for realizing efficient and participatory of local governance (Tanzi 2002). Dillinger (1994) in his research relate to the implementation of decentralization in various countries found that the trigger for this policy was to provide better public services. The purpose of decentralization is to making the government closer to its community, so the government services can be carried out more effectively, and the formed budget posture is more efficient. This is based on the assumption that the local government has a better understanding about the needs and aspirations of the community than the central government, so they can maximize the use of existing economic resources in order to create prosperity in the community.

Besides the availability of financial resources and fiscal capacity, there are other aspects that affect economic growth and human development in a region that is efficiency the use of income owned by the region (Totalia, 2015). The ability of local governments to manage regional income if not accompanied by efficient use, can make the expected goals will be hampered, and various economic problems will still occur

In measuring the achievement of human development, the United Nations has set a measure of human development standards, that is the Human Development Index (HDI). In particular, HDI measures the achievement of human development based on a number of basic components of quality of life. Based on HDI measurements, Indonesian Human

Development during 2010-2018 has increased. This can be seen from the Human Development Index (HDI) data shown in Figure 1

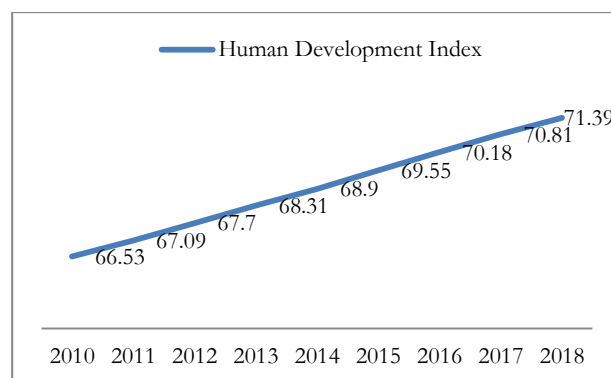


Figure 1. Indonesian's Human Development Index
(Central Bureau of Statistic, 2019)

The graph is represents the achievement of the Human Development Index (HDI) nationally during the period 2010 to 2018. Indonesia's HDI increased from 66.53 in 2010 to 71.39 in 2018. During this period, Indonesia's HDI grew by an average of 0.9 percent per year. Based on the international scale, the achievement of HDI can be categorized into four: high category ($HDI > 80$), upper middle category ($66 < HDI < 80$), lower category ($50 < HDI < 66$), and low category ($HDI < 50$). If measured on an international scale, Indonesian Human Development Index (HDI) statistically belongs to the middle to upper category, even close to high category.

HDI that offered by the United Nations as one measure of human development may be the most comprehensive indicator, but not fully compatible and sufficient to measure human development in the Islamic perspective (Rafsanjani 2014). To measure the achievement of human development in a country with a majority Islamic population, will be more appropriate if measurements are made using the Islamic Human Development Index (I-HDI), where theories and concepts are built based on meeting basic needs in the Maqashid Shari'a. I-HDI is calculated based on Indicators that reflect the five basic needs in the Maqashid Shari'a which are based on the views of Imam Asy-Syaitibi namely the Protection of Faith (*Hifz hud Diin*), Protection of Life (*Hifz hun Nafs*), Protection of Intellect (*Hifz hul 'Aql*), Protection of Posterity (*Hifz hun Nasl*), and Protection of Property (*Hifz hul Maal*).

The focus of this study is to analyze the level of efficiency of local government expenditure through the indicators of the Islamic Human Development Index (I-HDI) and try to answer which province is the most efficient and most inefficient in the realization of local government expenditure. This study also gave some recommendation for sectors that are not efficient,

using potential improvement to achieve the perfect efficiency. To see the realization, this study will conduct an efficiency analysis of local government expenditures in Indonesian's 34 provinces at 2015-2018 periods.

II. LITERATUR REVIEW

The main problem in the economy is limited resources that available to fulfill a relatively unlimited desire. So, one of the focus in economics discussion is to learn the allocation of resources to be efficient. Without efficiency, various economic problems will be created, such as gaps and misdirected allocations. According to KBBI, efficiency is the accuracy of the way (business, work) in carrying out something (by not wasting time, effort, and costs). Efficiency can be formulated with,

$$\text{Efficiency} = \frac{\text{Output}}{\text{Input}}$$

In conventional management theory, organizational performance is judged by how well an organization is able to minimize costs and create maximum profits. The Efficiency concept comes from the micro-economic concept, namely the producer theory. Producer theory tries to maximize profits or minimize costs from the manufacturer's perspective. In the producer theory there is a production frontier curve that describes the relationship between input and output of the production process (Ascarya and Yumanita 2007). The Production Frontier Curve is described as follows;

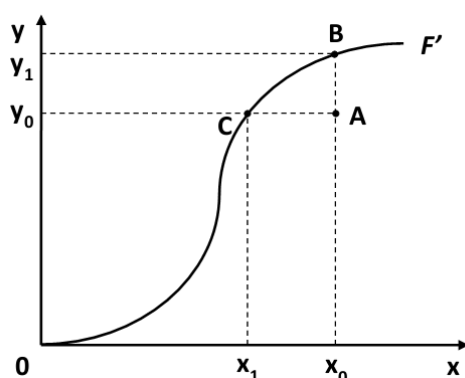


Figure 2. Production Frontier Curve

In the local government expenditure context, efficiency means condition when it is no longer possible to reallocate resources that can improve the welfare of the community (Stiglitz 2000). In other words, the efficiency of local government expenditure is a condition when every rupiah spent by the government produces the most optimal level of welfare. When these conditions are met, it can be said that government spending has reached an efficient level.

There are two types of efficiency, namely economic efficiency and technical efficiency. Economic efficiency has a macroeconomic picture, while technical efficiency has a microeconomic picture. Technical efficiency measurements are used to measure operational relationships in the process of using inputs into output. The DEA Term refers more to the definition of technical efficiency, namely the relationship between input and output in a business unit (Rusydiana 2013). To measuring the efficiency of an Decision Making Unit (DMU) there are two approaches can be used (Rusydiana 2013), these are:

1. Input Side Approach

The input side approach is used to answer how much input quantity can be reduced proportionally to produce the same output quantity.

2. Output Approach

The output side approach is used to answer how much the output quantity can be increased in proportion to the same input quantity.

Government Expenditure

Government expenditure can be interpreted as the use of a country's resources to finance a state activity, in the context of carrying out its functions in maintaining and realizing prosperity (Mangkoesebroto 2001). In Indonesia, government expenditure is compiled in the State Budget and Regional Government Budget.

Government expenditure is one element of aggregate demand. Based on Keynes Theory, the calculation of national income with the public expenditure approach states that;

$$Y = C + I + G + (X - M)$$

This formula is known as national income identity which was first introduced by Keynes. The variable on the right side is aggregate demand. G variable is government expenditure. By comparing the value of Y , it can be seen how much the contribution of government spending in determining aggregate demand or national income. With this formula, it can be analyzed how much influence government spending, especially in the state expenditure sector has on the economy.

Islamic Human Development Index (IHDI)

Human Development Index (HDI) that published by UNDP may be the most comprehensive indicator, but it is not fully compatible to measure human development in an Islamic perspective (Anto 2009). The theory that builds HDI is not based on Maqashid Shari'ah. Measuring the level of human development in countries with a Muslim majority population, or countries with Islamic ideologies would be more appropriate using the Islamic Human Development Index (IPMI).

Islamic Human Development Index (I-HDI) is a composite index of several indicators derived from the five basic needs in order to achieve Maqashid Shari'ah namely religion (*ad-din*), life (*an-nafs*), intellect (*al-'aql*), posterity (*an-nasl*), and property (*al-maal*). The five basic needs are basic human needs that must be met in order to achieve happiness in the world and the hereafter (*falah*). Simply put, I-HDI is a measurement of human development in an Islamic perspective.

Based on research conducted by Anto (2009) and Rafsanjani (2014), I-HDI was calculated based on data describing the five dimensions of Maqashid Shari'ah. For the dimensions of religion, the indicators used are the crime rate. Life dimension (*an-nafs*) Indicators used are life expectancy. Meanwhile, for the intellectual dimension (*al-'aql*) indicators are used namely the literacy rate and the mean years of schooling. For the posterity dimension (*an-nasl*) two indicators are used, namely total birth rate and infant mortality. For the dimension of property (*al-maal*), a combination of two indicators is used, that are the indicator of individual ownership of assets and indicators of income distribution. For indicators of ownership of assets the data used are real per capita expenditures adjusted. For indicators of income distribution Gini index data and poverty depth index is choosed.

III. PREVIOUS RESEARCH

Research on the efficiency of government spending, has been carried out by several previous researchers. Among them compare the efficiency level cross countries such as Gupta (2007) that analyzed the education and health sector efficiency of 38 countries in Africa, Alfonso & Miguel (2005) wich analyzed education expenditure efficiency in 25 OECD Countries, Ceullar (2014) also analyzed education sector efficiency in 15 Latin American Countries, and Brini (2016) that analyzed public sector efficiency in 11 MENA Countries. While the previous research that measures the efficiency of a country that are Almeikindederss (2007) wich analyzed education and health efficiency in Egypt, Quertani, et.al (2018) that measured public expenditure spending in Saudi Arabia, and Sekiguci (2019) wich analyzed the local government efficiency in Vietnam.

On a national scale, the research about efficiency analysis of local government expenditure incline to analyze efficiency on a provincial scale. Among them are Pertiwi (2007) which analyzed government spending of 35 districts / cities in Central Java in the education and health sectors, Putri (2015) analyzed the efficiency of regional government spending in West Java Province in the health sector, and Rapiuddin & Rusydi (2017) wich measured efficiency in education and health sector in 24 districts /

cities in South Sulawesi and Haryadi, A (2011) which analyzed efficiency in 403 districts / cities in Indonesia.

In terms of methods, non-paramethic methods with DEA models in recent years are increasingly being used in order to analyze efficiency. In the application of DEA method to measure the efficiency of government spending, the author refers to research conducted by Verhoven & Carcillo (2007), Afonso & Miguel (2005), Pertiwi (2007), Totalia (2005), Rapiudin & Rusydi (2017), and Haryadi (2011). Next, SFA method is used by Sekiguci (2019) to measured Vietnam's local government efficiency. The other method used in measuring expenditure efficiency is the Free Disposssable Hull (FDH). This method is used by Kurnia (2006) in his research "Model of Performance Measurement and Efficiency of the Public Sector", with a District / City case study in Central Java, and Gupta (1997) about the efficiency of government spending in the education sector in Africa.

IV. DATA & METHODOLOGY

This study aim to analyze the efficiency of local government expenditure in Indonesian's 34 Provinces at 2015-2018 periods. Data related to regional expenditure is derived from the realization of local government expenditure per function obtained form Directorate General of Regional Fiscal Balance (Ministry of Finance). Data related to the Islamic Human Development Index Indicators derived from Central Bureau Statistic.

Input Variable

The input variable that used is resources owned by each Provincial Local Government in carrying out their duties to create prosperity in each region. The input variable used consists of government expenditure on sectors that represent Maqashid Shari'a. Maftukhatusolikhah (2015) classifies the pattern of the simultaneous relationship between the Shari'ah Maqashid and government spending based on the following functions:

Table 1. Pattern of Relationship between Maqashid Shari'a and Government Expenditure

<i>Maqashid Shari'a</i>	Based on Function	Aplication
Faith	Religion Order Defense	Aqidah
		Ibadah
		Supervicory Agency
		Justice Institution Security Agency
Life	Public service Health	Food
		Clothes Health

	Housing and Public facilities Social protection	Transportation Tellecommunication Security Job Field Social Protection
Intellect	Education Tourism and Culture	Education Culture Tourism Scientific research
Posterity	Living Environment	Marriage Institution Center for the development of pregnant mothers Caring for orphans Orphanage
Property	Economy	Financial and Investment Institutions Financial Strategy Development Strategy Property Maintenance Strategy Guarantee of Private Ownership Rights Property Security

(Maftukhatussolikah 2015)

In Indonesia, religious affairs are handled directly by the central government through the Ministry of Religion, and the regions do not have autonomy for that matter. Then the input used to represent of protection of faith (*Hifz'bud Diin*) is order and security. According to Afra in Maftukhatuskholihah (2015) this is accordance with the details of basic rights in the maintenance of religion where there are points of religious institutions: services of security forces to ensure the safety and security of the implementation of da'wah, basic equipment and weapons to safeguard the security of the state, intelligence services, equipment and material and spiritual training. Likewise with the defense function. Law No. 13 of 2006 about regional governments also explains that defense and religious affairs are matters that are not decentralized, or are directly state matters.

Therefore the input variables used in this study are;

- Hifz'bud Diin*: total realization of local government expenditure per capita based order and security functions, 34 provinces in Indonesia
- Hifz'hun Nafs*: total realization of local government expenditure per capita based

on, Housing and Public Facilities, Social Protection, Public Services, and Health functions, 34 Provinces in Indonesia

- Hifz'bul 'Aql*: total realization of local government expenditure per capita based on the Education, Tourism and Culture functions, 34 Provinces in Indonesia
- Hifz'hun Nash*: total realization of local government expenditure per capita based on Living Environment functions, 34 Provinces in Indonesia
- Hifz'bul Maak*: total realization of local government expenditure per capita based on the economic function of 34 provinces in Indonesia

Output Variable

The Output variable used in this study is a reflection of the performance of each sector financed by the government, as a provider of public service in order to achieve the Maqashid Shari'a. Output variables are indicators that can measure the achievement of human development in the Islamic perspective, the Islamic Human Development Index (I-HDI). The Indicator used refers to Anto's research (2009) about I-HDI, wich illustrates the five dimensions of Maqashid Shari'a. There are Crime Rite (*Hifz'bud Diin*), Life Expectancy (*Hifz'hun Nafs*), Mean Years of Schooling (*Hifz'bul 'Aql*), Live Birth Rate (*Hifz'hun Nash*), Per Capita Expenditures (*Hifz'hun Nash*).

Data Envelopment Analysis (DEA)

Data envelopment analysis (DEA) is a non-parametric mathematical programming to estimate the inefficiency of outputs given inputs and vice versa. This method constructs an envelopment frontier over the data points such that all observed points lie on or below the production frontier (Coelli 1996). This method, however, does not generate general relationship and only rely on the input-output ratio optimization. It firstly introduced by Farrell (1957) and then extended by Banker, Charnes, and Cooper (1984) to accommodate when the decision making units (DMUs) are operating at the non optimal scale environment. These non-optimal scales might be caused by imperfect competition, constraint on resources, etc

DEA can be used to determine the relative efficiency level of several Decision Making Unit (DMU)s, and can many outputs and inputs with different units. DEA method can also provide information about Decision Making Unit (DMU) that do not use efficient inputs and causes of inefficiencies, both in input and output variables. Last, this method can generate information how much input and output must be adjusted to have a maximum relative efficiency value.

V. RESULT & ANALYSIS

The efficiency level of 34 provinces in Indonesia will be displayed during 2015-2018 period using the Data Envelopment Analysis (DEA) method. Results of DEA measurements will be displayed through efficiency scores ranging from 1-100%. A score of 100% illustrates the ability of local governments to manage their owned funds optimally. Whereas if the efficiency score keeps away from the 100%, it can be indicated that a local government is inefficient or has not managed its funds optimally.

Based on DEA result with Variable Return to Scale (VRS) assume and using MaxDea 6.1 software, it can be seen the level of efficiency of regional government expenditure in 34 provinces in Indonesia. The results illustrate the achievement of efficiency values of each provincial government in managing regional expenditure. The expenditure efficiency score of regional governments 34 provinces in Indonesia can be seen in the following table:

Table 2. Efficiency Score of Regional Government Expenditure 34 Provinces in Indonesia

Province	Efficiency Scores			
	2015	2016	2017	2018
Aceh	100%	80.20%	100%	100%
North Sumatera	100%	100%	100%	100%
West Sumatera	100%	100%	100%	88.02%
Riau	24.07%	12.77%	27.49%	52.78%
Jambi	11.26%	7.03%	7.13%	5.74%
South Sumatera	23.06%	15.14%	17.61%	13.13%
Bengkulu	24.38%	33.30%	41.91%	38.75%
Lampung	32.59%	13.48%	15.10%	17.90%
Jakarta			100%	100%
West Java	100%		100%	100%
Central Java	100%	100%	100%	100%
Yogyakarta	100%	100%	100%	100%
East Java	36.03%	33.37%	32.60%	31.07%
West Kalimantan	5.76%	7.09%	100%	2.33%
Central Kalimantan	7.17%	32.94%	5.93%	4.96%
South Kalimantan	13.97%	5.28%	9.89%	37.64%
East Kalimantan	100%		100%	100%
North Sulawesi	70.49%	100%	47.14%	73.79%
Central Sulawesi	7.04%	5.14%	6.94%	17.07%
South Sulawesi	13.07%	81.42%	42.01%	57.30%
Southeast Sulawesi	14.85%	34.35%	46.97%	78.03%
Bali	8.47%	100%	56.23%	100%
West Nusa Tenggara	17.96%	81.65%	44.01%	57.08%
East Nusa Tenggara	15.39%	100%	9.59%	13.99%

Maluku	100%	100%	78.15%	100%
Papua	11.05%	4.61%	3.57%	3.04%
North Maluku	14.05%		39.46%	61.17%
Banten	16.43%	17.34%	32.55%	50.04%
Bangka Belitung	3.90%	3.83%	3.69%	3.36%
Gorontalo	7.23%	7.25%	3.74%	4.21%
Riau Island	100%	71.72%	100%	100%
West Papua	2.08%	7.63%	2.36%	2.94%
West Sulawesi	4.71%	3.90%	6.40%	15.01%
North Kalimantan	15.87%	26.86%	15.10%	20.92%
Mean	39.42%	46.21%	46.93%	51.48%

In this research there are some data that cannot be displayed due to the confidentiality of data or the data has not been officially published. That are the government expenditure of DKI Jakarta in 2015 and 2016, and also government expenditure of West Java, East Kalimantan, and North Maluku in 2016. The author eliminated these DMU as running subject and analyzing data. Because the absence of data makes the DMU cannot be analyzed for efficiency.

Based on the table above, it can be seen that the efficiency score of provincial government expenditure in Indonesia in 2015-2018 has fluctuated. The overall average efficiency score of 34 provinces in Indonesia in 2015-2018 periods is 46%. However, if it is measured annually, the average score of provincial government expenditure efficiency has increased by 39.42% in 2015, 46.21% in 2016, 46.93% in 2017, and 51.48% in 2018. Efficiency utilization of regional expenditure in Indonesia is still quite low, but continues to experience positive progress every year.

There are 3 provinces that achieved perfect efficiency score during the 4 year study period, namely North Sumatra, Central Java, and DI Yogyakarta. Whereas the regions with the lowest average efficiency score in 2015-2018 were Bangka Belitung with an average efficiency of 3.7% and West Papua 3.75%. It can also be seen there are 2 provinces that have increased in efficiency score each year during the 4 year study period. There are Banten and South Sulawesi. Banten achieved an efficiency value of 16.43% in 2015, then increased to 17.34% in 2016, 32.55% in 2017, and 50.04% in 2018. The efficiency score of South Sulawesi Province was 14.85% in 2015. Then it increased to 34.35% in 2016, 46.97% in 2017, and 78.03% in 2018.

Efficiency scores can be classified into 4 groups based on their efficiency scale, namely Fully Efficient (100%), High Efficient (80-99%), Medium Efficient (50-79%), and Low Efficient (less than 50%) (Rusydiana 2017). Of the total 131 DMU analyzed, there were 37 DMU which reached a maximum efficiency value of 100%, while the other 94 DMU did

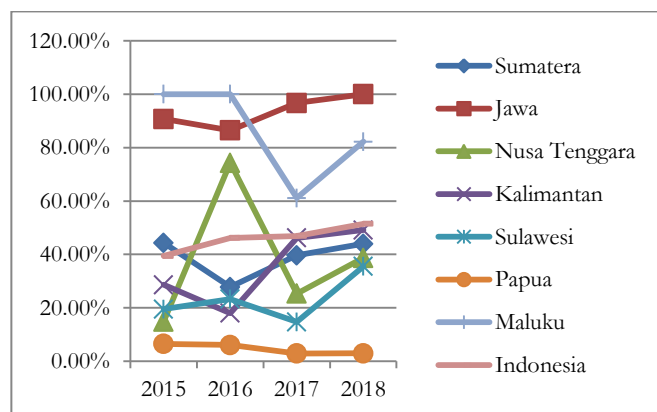
not reach maximum efficiency (100%), with details; efficiency of 80-99% by 4 DMU, 50-80% by 11 DMU, and efficiency scores below 50% by 52 DMU, in the period 2015-2018.

Regional Efficiency Analysis

In this part, we would like to discuss regional disparities in expenditure efficiency given the fact that Indonesia is a large country with a vast territory and abundant resources. A comparison of regional efficiency in Indonesia will be discussed based on islands or Indonesian administrative division to analyze regional distribution of equilibrium and efficiency. The administrative division of Indonesia is the division of land and water areas in Indonesia to be managed by regional governments within the boundaries of their respective territories according to the principles of autonomy, decentralization, and co-administration. This is regulated in Law no. 23 of 2014 concerning Regional Government which has been amended several times, and regulated by the Ministry of Internal Affairs

Indonesian's Administrative Divisions by Province	
Sumatera	Aceh, North Sumatera, West Sumatera, Bengkulu, Riau, Riau Island, Jambi, South Sumatera, Lampung, Bangka Belitung
Java	Jakarta, West Java, Banten, East Java, Yogyakarta, Central Java
Kalimantan	West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, North Kalimantan
Nusa Tenggara	Bali, West Nusa Tenggara, East Nusa Tenggara
Sulawesi	West Sulawesi, South Sulawesi, Central Sulawesi, Southeast Sulawesi, North Sulawesi, Gorontalo
Maluku	Maluku, North Maluku
Papua	Papua, West Papua

Figure 3. Government efficiencies by Administrative Divisions in Indonesia form 2015 to 2018



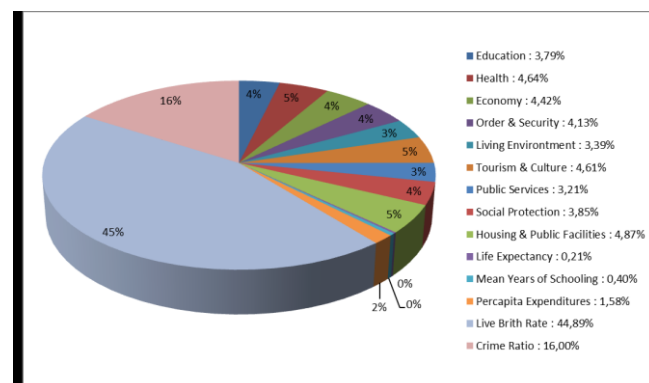
Based on Figure 3, it can be seen that there are gaps in achieving regional efficiency in Indonesia. The efficiency values in Jawa and Maluku far outperform

other islands with an average efficiency of 94.98% and 82.5%. Then followed by Kalimantan (39.59%), Sumatra (38.97%), Nusa Tenggara (38.33%), Sulawesi (23.29%) and Papua (4.66%), where these islands are below the average national efficiency (46.05%). The efficiency value between Jawa and Papua has a very sharp gap. This illustrates that there are differences in the ability of local governments to manage the regional budget, or distribution of resources is not evenly distributed. Therefore the central government should give more attention to this gap and pay special attention to Papua. However, from Figure 2 we also find that there has been an increase in the average national efficiency, and in all regions at least in the last 2 years. This means that the development of regional expenditure efficiency in Indonesia has generally begun to improve and shows positive progress.

Potential Improvement

In addition to producing efficiency scores, DEA can also produce potential improvement or the level of improvement needed to achieve optimal efficiency values. So it can be seen which variables need to be optimized. The author uses government expenditure in 2018 to conducting a potential improvement analysis. The use of this last year is an effort to explain the amount of real value that must be achieved. The results of measurement of potential improvement can be seen in the following graph;

Figure 4. Potential Improvement Diagram



Based on potential improvement analysis, it can be seen that the main cause of inefficiency is not yet optimal in achieving the outputs indicators of the Islamic Human Development Index (I-HDI), especially in Life Birth Rate indicators. This indicator is the main source of inefficiency in regional government spending, which is 44.89% affect the inefficiency. This means that local governments that have not yet reached the maximum efficiency, should focus on increasing the live birth rate in their area by 44.89% so that the region achieves optimal efficiency values. The next sources of inefficiency in output variable are Crime ratio of 16%, Per capita expenditure 1.58%, Average mean years of schooling 0.4%, and Life Expectancy 0.21%. In an effort to achieve a maximum efficiency, the local

governments must try to improve the indicators of the Islamic Human Development Index by these numbers.

Whereas in the input variable, inefficiency is caused by the suboptimal utilization of the regional budget. Potential improvement results in 34 provinces in Indonesia show that the expenditure budget for housing and public facilities is not optimal use of 4.87%. Then the health function expenditure is not optimal 4.64%, the tourism and cultural function 4.61%, the economic function 4.42%, the order and security function 4.13%, the education function 3.79%, the environmental function 3.39%, and public service functions 3.21%. The local government should reduce the input value to reach maximum efficiency. But in reality, local governments are unlikely to reduce regional income. The interpretation of reduction in input values in this case can be translated as reducing the allocation of funds in sectors that do not add output values, or optimizing the use of input values. This can be done in 3 ways: choosing activities, reducing activities, and eliminating activities that do not add value to people's welfare (Mardismo 2004). Therefore regional government must develop a budget planning strategy, because different strategies require different activities and different activities have different cost requirements (Totalia 2015).

CONCLUSION

- 1) The average value of the efficiency of Indonesian's local government expenditure from 2015 to 2018 has increased every year, with an average efficiency value of 46%. There are three regions that achieved perfect efficiency in the 4-year study period, namely North Sumatra Province, Central Java Province, and DI Yogyakarta Province. Whereas the regions with the lowest average efficiency are Bangka Belitung and West Papua Provinces with efficiency values of 3.7% and 3.75%
- 2) The main cause of inefficiency in regions that have not yet reached the optimal efficiency value is the achievement of the indicator of live birth rate that is 44.89%. Then the Crime ratio indicator is 16%, Per capita expenditure 1.58%, Mean Years of Schooling 0.4%, and Life Expectancy 0.21%. As for the variable utilization of government expenditure, the source of inefficiency is suboptimal of government expenditure on housing and public facilities by 4.87%, health functions 4.64%, tourism and cultural functions 4.61%, economic functions 4.42%, order and security function 4.13%, education function 3.79%, environment function 3.39%, and public service function 3.21%.

RECOMMENDATION

Based on the results of the study, it can be suggested to the provincial government as follows:

- 1) Provinces that have reached maximum efficiency levels must be able to maintain government performance by maintaining a large portion of inputs, and continue to work to increase output. So that the level of community welfare can be maintained, or even increased in the following year.
- 2) Provinces that have not yet reached the maximum efficiency level should further optimize the use of their regional expenditures, by choosing the right strategy in using their regional income allocations and referring to other provinces that are already efficient. Expenditures should be oriented towards the public interest, preventing corruption, overspending, and misdirection in allocating budgets to areas that are not a priority.

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