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# TECHNICAL EFFICIENCY OF LOCAL GOVERNMENT SPENDING IN THE HEALTH SECTOR IN SOUTH KALIMANTAN PROVINCE

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**Abstract:** The purpose of this research is to calculate the technical efficiency of the health sector budget in all local governments in the province of South Kalimantan in 2015 to 2019. This research is a quantitative research with secondary data types that are sourced from literature studies from books, literature, internet, notes and other sources related to research problems. The value of technical efficiency here is based on the combination of inputs used and outputs produced by the health sector in each district / city in South Kalimantan which is solved in a linear programming equation through non-parametric analysis with the Data Envelopment Analysis (DEA) model. The results showed that the technical efficiency of government spending in the health sector in regencies / cities in South Kalimantan, with the assumption of variable return to scale (VRS) during the 2015-2019 period, was relatively inefficient.

**Index Terms:** Health Sector, Technical Efficiency, Data Envelopment Analysis

## 1. INTRODUCTION

Since January 2001 Indonesia started a new chapter in its government system by adopting a decentralized system. Improvements to legislation were continuously carried out until Law Number 23 of 2014 concerning Regional Government was issued, improvements, especially in fiscal decentralization, were made to further improve the efficiency and effectiveness of regional financial administration by taking into account aspects of the relationship between the central government and regions and between regions, regional potential and diversity, as well as opportunities and challenges of global competition in the unified state governance system.

This efficiency is one of the important issues of fiscal decentralization in both developed and developing countries. Fiscal decentralization is expected to have an impact on the allocation of government spending by increasing the efficiency of government spending and also increasing the performance and efficiency of the public sector. Decentralization is able to improve the allocative efficiency of expenditure allocations by providing more diverse preferences for community choices and is able to increase productive efficiency through increasing sensitivity of local governments to community needs [1], [2], [3], [4].

Minister of Finance Sri Mulyani Indrawati revealed that many budget allocations in the APBD are still inefficient. According to him, there are still many local governments that spend their budgets only to pay employee salaries or personnel expenses, even though the central government annually allocates transfer funds to regions and village funds (TKDD) [5].

Local governments currently face two trends of inefficiency, namely productive inefficiency and allocative efficiency. Productive inefficiency is a combination of inputs, which in this case includes local government spending, does not produce optimal output, while allocative inefficiency is an inaccuracy of spending allocations according to community needs. Most of the regions, more than 75% of the APBD is allocated for salary and operational expenditures, the assumption of fiscal decentralization that local governments know better about the needs and conditions of their respective regions is entirely correct. This is evident from the fact that local governments are generally less creative in designing activities that can improve the welfare of the community. As a result, the Regional Government allocates a large part of the budget which is geared towards the welfare of ASN only, so that the budget which leads to the welfare of the community at large in the regions is not given attention [5].

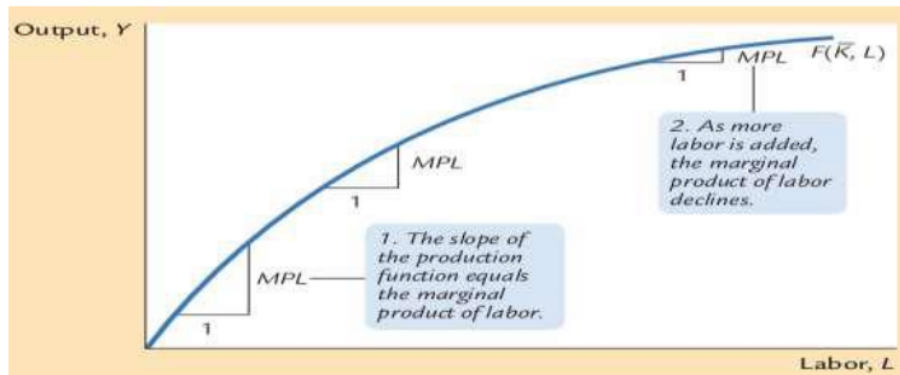
The theory of increasing human resources through capital investment states that investment can be made not only in the business fields that we are familiar with but can also be done on human resources in the form of improving education, nutrition and health with the aim that these humans are able to earn higher income [6]. This significant benefit for increased productivity and income has been demonstrated by a number of studies [7], [8], [9], [10].

Given the application of specific development policies in the health and education sectors, as well as other public sectors faced with concerns over market failures, this becomes the basis for thinking about the need for the role of government so that it is interesting to study.

## II. LITERATURE REVIEW

Production is the process of combining inputs and converting them into outputs, meaning that production activities involve, transform, combine resources (inputs) such as labor, capital and so on into outputs that have higher added value. The relationship between input and output is called the production function which is defined as a numerical or mathematical formula about the

relationship between input and output [11]. The production function assumes single input and single output for one company as shown in the following graph [12].



Measurement of production efficiency can be done using the Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA) approaches. Both of these approaches use the estimation of the frontier function (limit), that each production factor used in the production process has a maximum and optimal capacity. Efficiency measurement using the DEA approach uses Linear Programming, while the SFA approach uses the econometric method.

The basic principle of efficiency in economics terminology is how to produce the maximum possible output by using limited inputs or using minimal costs. Production efficiency is a measure of the ratio between the output obtained and the input that is sacrificed. The production efficiency of a company consists of two components, namely technical efficiency and allocative efficiency. Technical efficiency (technical efficiency) reflects the ability of a company to produce maximum production or output by using a certain number of inputs, while allocative efficiency shows the ability of a company to use a number of inputs in optimal proportions with a certain level of input prices and production technology [13]. The combination of the two efficiencies determines a measure of total economic efficiency.

DEA is the application of the Linear Programming method to form a non-parametric frontier from a set of data. DEA was first developed by [14] to measure and compare the relative efficiency of a group of Decision Making Units (DMU) [15]. Input-oriented models are aimed at reducing the use of inputs at a certain level of production output. For the dual case the output-oriented model is aimed at finding the highest optimal output level with the use of a particular input. Efficiency indicators are measured by comparing the ratio between funds (input), process, output, and results. The greater the output than the input, the higher the level of efficiency of an organization. The efficiency measure measures how well the organization is able to use its resources to produce output [16]. In measuring the performance of value for money, efficiency can be divided into two, namely: a) Efficiency of allocation. Allocation efficiency is related to the ability to utilize input resources at the optimal capacity level; b) Technical or managerial efficiency. Technical efficiency is related to the ability to utilize input resources at a certain output level.

The Ministry of State for Administrative Reform (Permenpan, 2008) divides performance indicators into three things: inputs, outputs and outcomes for the health sector a). Input; Average Percentage of Health Budget in Municipal APBD and Allocation of Government Health Expenditure per capita; b). Output; The ratio of the number of medical personnel (general practitioner, specialist doctor, and dentist), the ratio of the number of midwives and nurses, the ratio of the number of hospitals and health centers, the ratio of the number of beds in the available hospital, immunizations for children under five, bed occupancy rate, and the ratio of posyandu per toddler; c). Outcome; Life Expectancy, Infant Mortality Rate, Infant Mortality Rate, Maternal Mortality Rate, Coverage for malnourished children under five, receiving treatment, disease prevalence rate and mortality rate.

### III. RESEARCH METHODS

The formulation of the problem aims to measure the value of technical efficiency in the health sector in each district / city in South Kalimantan from 2015 to 2019. The value of technical efficiency here is based on the combination of inputs used and outputs produced by the health sector in each district / city, in South Kalimantan which is solved in a linear programming equation through non-parametric analysis with the Data Envelopment Analysis (DEA) model.

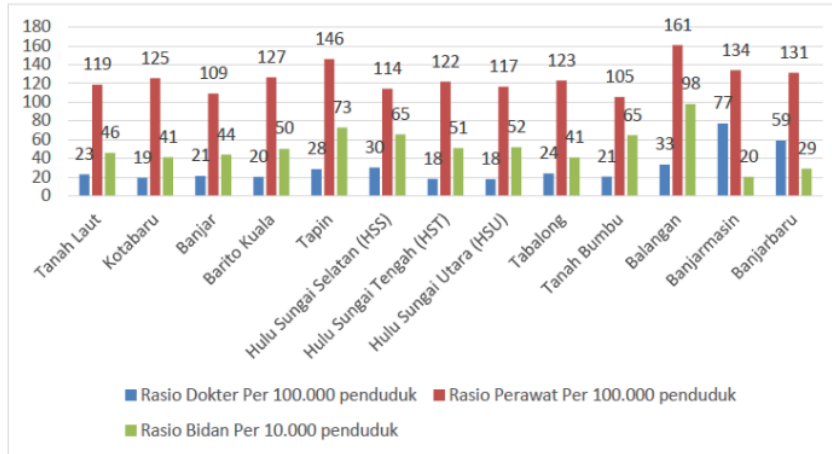
The data used in this research is secondary data in the form of time series data and cross section data of districts and cities in South Kalimantan from 2015 to 2019. The data is collected through literature studies from books, literature, internet, notes and other sources related to research problems.

### IV. RESULT AND DISCUSSION

The district with the largest per capita health expenditure was Balangan district, amounting to Rp. 8.9 million per person and the smallest is the city of Banjarmasin and Banjar district, which is Rp. 3.8 million per person. As for the city of Banjarmasin and Banjar district, the two regions have the first and second largest expenditures among the regencies of the city of South Kalimantan,

but considering that the school-age population is large, they have a small average expenditure compared to other urban districts, which both have per capita expenditure of Rp. 3.8 million.

The average government expenditure for the health sector in the City District in South Kalimantan during the 2015-2019 period was Rp. 195.7 billion per year and there are 6 (six) urban districts that are below the average, namely Kotabaru Regency, Tapin Regency, Barito Kuala Regency, Regency, Hulu Sungai Utara Regency, Tabalong Regency, and Balangan Regency. Meanwhile, as many as 7 (seven) city districts are above the average expenditure, namely Tanah Laut district, Banjar district, Hulu Sungai Selatan district, Hulu Sungai Tengah district, Tanah Bumbu district, Banjarmasin City, and Banjarbaru city. Average ratio of doctors, nurses and midwives per population of South Kalimantan Regency / City in 2015-2019.



The value of technical efficiency is used to see how much the level of efficiency in the use of inputs in the form of health expenditures issued by each district / city government in South Kalimantan Province to produce health facilities and services in order to achieve the highest degree of health. The calculation of technical efficiency uses the Variable Return to Scale (VRS) assumption, because the large per capita expenditure input for the health sector is able to produce output in the form of health facilities and services with different magnitudes. Other assumptions used in calculating the technical efficiency of the health sector in this study are output maximization (output oriented) and ceteris paribus.

The technical efficiency of the health sector in 13 districts / cities in South Kalimantan as shown in Table 5.7 shows that during 2015-2019 the average value of the technical efficiency of government spending in the health sector was 0.852 (85.2%) and from year to year shows an increase. If in 2015 the average was 0.841 (84.1%) in 2019 the average was 0.885 (88.5%). This means that in 2015 with the available health sector government spending, district / city governments still have to maximize their output by 15.9 percent and in 2019 it will decrease to 11.5 percent.

There are districts / cities that consistently have an optimum efficiency value ( $e = 1$ ), namely Balangan Regency and several districts showing efficient use of health spending for 1 to 3 years, namely Tapin Regency, Hulu Sungai Selatan Regency, Hulu Sungai Tengah Regency, and Banjarmasin City. If in 2015 as the beginning of the research there were 4 efficient districts / cities, in 2019 there was a decrease to 3 districts / cities.

Districts that are not efficient every year occur in 8 districts / cities, namely Tanah Laut Regency, Kotabaru Regency, Banjar Regency, Barito Kuala Regency, Hulu Sungai Utara Regency, Tabalong Regency, Tanah Bumbu Regency, and Banjarbaru City. Among these districts / cities, Banjar Regency has the smallest average technical efficiency value, namely 0.641 (64.1%), which means that to achieve an efficient condition, Banjar Regency must increase the average achievement of indicators for health sector service facilities by 35.9%. Then followed Tanah Bumbu District with an inefficiency of 0.657 (65.7%) which required Tanah Bumbu Regency to improve its health service facilities again by 34.3 percent.

This research discusses technical efficiency, where technical efficiency refers to the ability to avoid wasteful use of resources. To produce a certain number of outputs with a certain input or use a small number of inputs to produce a number of outputs [15]. Technical efficiency indicates the maximum output that can be produced with a particular input and technology. The findings in this study are that only a few district / city governments in South Kalimantan are able to maximize output with a certain number of government spending inputs in the health sector.

#### IV.CONCLUSION

The technical efficiency of government spending in the health sector in districts / cities in South Kalimantan, with the assumption of variable return to scale (VRS) during the 2015-2019 period, is relatively inefficient. This is indicated by only one district (Balangan) which consistently has an optimal efficiency value from year to year ( $= 1$ ) among the 5 districts / cities that have ever received an optimal efficiency value. In addition, it is also marked by the increasing average value of technical efficiency from year to year with an average value of 0.852.

This increase in efficiency can be done by carefully planning the needs of health service facilities according to the needs of each targeted area by ensuring equality and quality of health services. Attention to the health of the population aged 65 years and over must continue to be a priority for government spending in the health sector and not make them a burden on the budget.

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