

A Comparison of Social Security Agency's Efficiency in Indonesia: Pre and During Covid-19

Krisna Winda Putri

Department of Economics
IPB University
Bogor, Indonesia
krisnaawinda@gmail.com

Muhammad Firdaus

Department of Economics
IPB University
Bogor, Indonesia

Syamsul Hidayat Pasaribu

Department of Economics
IPB University
Bogor, Indonesia

Abstract- The Covid-19 outbreak have brought detrimental effect for social and economic sectors. Many workers get laid-off, and firms get bankruptcy. As the impact, the rate of unemployment becomes higher globally, including Indonesia. This issue has some impact to the operational of social security agency for employment. To be compared with 2019, some performance indicators like number of participants experienced declining 2020, and it was resulted to contribution revenue. Efficiency measurement should be performed in order to analyse whether social security agencies had operated efficiently. This research used 30 branch offices to be the samples. To calculate the efficiency value, Data Envelopment Analysis (DEA) method had be functioned. Based on the findings, branch offices become more efficient in pandemic situation than previous year. In 2020, there were 17 efficient branch offices, meanwhile its last year, only 12 branch offices which operated perfectly significant. Suggestion for the institution were optimizing the usage of inputs, strengthening the role of external agent, collaborating with the government and law enforcement, and doing some publication to get people' awareness.

Keywords – Data Envelopment Analysis, Efficeny, Employment, Social security.

I. INTRODUCTION

Many countries have implemented social protection schemes for alleviating poverty, increasing equality, and strengthening financial security. It is also necessary to improve human capital by promoting access to information and services, enhancing productivity, and protecting the elderly. Secure workers are expected having good performance at their work and contribute to economic growth. In Indonesia, BPJS Ketenagakerjaan is one of the institutions in charge of administering the social security program for employment. There are five benefits providing, like Work Accident Benefit, Death Benefit, Old-Age Benefit, Pension Benefit, and Unemployment Benefit. These schemes are compulsory for all workers (excluded government employee that registering in other institution) in order to ensure their basic needs against social-economic risks.

As a mandated institution to held the systems, BPJS Ketenagakerjaan is demanded to provide good governance. Based on financial indicators, investment fund and assets had grown approximately 86 percent during five years between 2016 until 2020, respectively, while the realized investment return increased at 46 percent. Yet, the growth of operational indicator was quiet low on those periods. From 128 million workers in Indonesia [1], the coverage of active membership on 2019 was around 34 million workers. In addition, this coverage had decreased around 4 million workers during Covid-19's attack in 2020 [2].

The Covid-19 has had various detrimental effects on social security agency's performance. In 2020, there was 2,7 million unemployed people due to the pandemic, which has increased the unemployment rate to almost 37,61 percent [1]. As a result, around 4 million workers or 14% of the workforce stopped contributing to social security. Because of many firms going bankrupt and workers getting cut off, the contribution suffered stagnating. Roughly, 73 trillion rupiahs premium had been collected in 2020, which was equivalent to the premium that had been paid in 2019. It would become difficult to guarantee that there are adequate funds, since the expense of paying claims kept rising. Old Age Benefit payments rose by almost 6,7 trillion rupiah as a consequence of the high unemployment rate.

Table 1: Comparison of Contribution and Claim Between 2019 and 2020 (in million)

Year	2019	2020	Growth (%)
Contribution Revenue	Rp73.427.496	Rp73.263.768	- 0,22
Claim Expenditure	Rp29.716.412	Rp36.445.474	22,64

Source: BPJS Ketenagakerjaan, 2020

The economy has not been stable for the foreseeable future. Since the agency receives a fee from each made contribution, the sufficiency of the operational fund, which is used to operate social security services, would be

challenged. Due to operating budgetary constraints, BPJS Ketenagakerjaan must use resources more efficiently in order to execute at its finest. Hence, in order to optimize outputs using the current input, it would be necessary to conduct efficiency analyses, specially during Covid-19. Data Envelopment Analysis (DEA) is one of the techniques used to evaluate the level of efficiency. This method has been commonly employed to evaluate the efficiency of pension fund management [3];[4] and insurance companies [5];[6];[7]. Nevertheless, it is still tough to acquire research that investigates the efficiency of social security organizations, specifically in Indonesia. Recognizing the research gap, this study focuses on analyzing the efficiency level of social security agency in different time, pre and during Covid-19. Both periods are necessary to investigate in order to explore whether this institution has been more efficient in producing output during uncertain economic condition.

II. LITERATURE REVIEW

1. Efficiency Concept

The microeconomic theories of consumption and production are closely related to the theory of efficiency. In the theory of production, efficiency refers to a firm's capability to generate the most profit from its products, whereas in the theory of consumption, efficiency relates to consumers' capacity to maximize the utility or pleasure that would result from their choices [8]. According to the production theory, the firms will operate at its most efficient level if it can maximize output while using fixed inputs or minimize input utilization while still producing a level output. A Frontier line production is related to the principle of production efficiency. The connection between input and output variables in a production process is illustrated in this line.

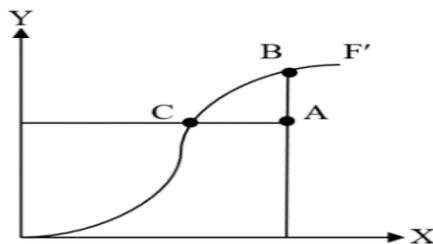


Fig.1. Production Frontier Line [9]

The F' line outlines how to obtain the maximum value of the output variable for each level of the input variable. The variables X and Y are the input and output, respectively. Accordingly, companies with technical efficiency conduct out operations above the Frontier line. Points B and C are where the efficient point is positioned. The technological firm should be able to boost production up to the tangent of point B without having to issue additional input, or the company can also supply a fixed output with slightly more inputs as indicated by point C. On the other side, point A represents an inefficient

position. Technical efficiency is the ability a firm has to run production across the entire isoquant curve. The curve displays the maximum performance when a particular number of inputs are combined. Producers have an alternative between input- and output-oriented techniques when evaluating the level of efficiency. Through input orientation, producers could use less input to produce a given output. Producers, as opposed to those who are output-oriented, can boost production while using a particular quantity of input [9].

2. Measuring Efficiency

In this experiment, DEA, a non-parametric approach, was applied to calculate the efficiency score. DEA is a non-parametric technique frequently used to calculate a Decision Making Unit's (DMU) efficiency score. In 1957, Farrell made the initial discovery of this technique which this approach has the benefit of being able to examine numerous inputs and various outputs. The DEA approach defines the DMU's efficiency in comparison to its peers when each of these units is at or below the DMU's frontier efficiency curve. The finest standards for practical DMU would be created using benchmarking that is obtained using this approach. Additionally, the DEA offers a projection of the potential improvements that ineffective DMUs could achieve [10].

According to [11] there are two models that may be used to measure efficiency using the DEA method. The first DEA model to be proposed was the Charnes, Cooper, and Rhodes (CCR) model in 1978. This approach, known as CRS, implies that the ratios of the addition between the input and output will be the same (Constant Return to Scale). The CRS model assumes that if input is multiplied by x times, output will similarly increase by x times.

The advancement of the earlier CCR model, which first appeared in 1984, led to the creation of the Banker, Charnes, and Cooper (BCC) model. This model requires the presumption that a business has not reached or is not now operating at its ideal scale. Competition and financial limitations are only two examples of the many variables that can prevent a company from operating at its ideal scale. The VRS (Variable Return to Scale) condition, in which the ratio of the addition of input and output is not the same, is described by the BCC model as what the DMU is. Therefore, if the input is increased by x times, the output will not necessarily increase by x times as well (Fathony 2013). Instead, the output may be bigger or lower than x times.

III. RESEARCH METHOD

1. Data Type and Source

The information used in this analysis is secondary data in the form of panel data, namely a combination of cross-sectional information from BPJS Ketenagakerjaan branch

offices across Indonesia and time series information from annual financial reports for the 2019–2020 period. The information is directly acquired from BPJS Ketenagakerjaan.

3.2 Research Sample

The total number of branch offices in 2020 were 123 offices that located throughout Indonesia. This research used 30 of branch offices that positioned in capital cities, to be the representative the condition of regions. The name of branch offices which become sample of research are Medan, Pekanbaru, Batam, Palembang, Jakarta Salemba, Jakarta Grogol, Jakarta Kelapa Gading, Jakarta Rawamangun, Jakarta Menara Jamsostek, Jakarta Cilindak, Jakarta Gambir, Jakarta Kebon Sirih, Jakarta Slipi, Bandung, Bekasi, Bogor, Tangerang, Serang, Sukabumi, Karawang, Tangerang, Bekasi, Semarang, Surakarta, Yogyakarta, Surabaya, Sidoarjo, Pontianak, Makassar, and Bali.

3.3 Data Analysis and Processing Method

Descriptive analysis and quantitative analysis are the data analysis techniques employed in this study. The goal of descriptive analysis was to investigate and clarify a situation. On the other hand, the Data Envelopment Analysis (DEA) approach, which is utilized to determine the efficiency score of BPJS Ketenagakerjaan's branch offices, was employed for the quantitative analysis in this study. DEAP application would be operated to process the data. Technical efficiency scores, pure technical efficiency, and efficiency scales are computed using the DEA approach. An intermediation technique with an output orientation was adopted in this analysis.

The branch office is allocated to carry out operations like service and marketing while the provision of input is decided by the head office, hence output orientation is utilized because the branch office lacks the direct ability to change the amount of current input. The efficiency scale, pure technical efficiency, and technical efficiency scores vary from 0 to 1. If the company's efficiency score is close to 1, it is considered to be efficient, and if it is close to 0, it is considered to be inefficient.

There are three input variables and five output variables that use in this research. The input variables are a modification of [12] which explains that in the insurance industry, the input factors used are labor, services, and assets. Meanwhile, output variables used are the indicators of the performance of the BPJS Ketenagakerjaan's branch office based on the Regulation of the National Social Security Council (DJSN) of the Republic of Indonesia No. 1 of 2020.

Table 2: Input Variables and Output Variables

No	Variables	Definition
Input		
1	Operational Cost	The cost for marketing, services, maintenance of fixed assets, and operational in branch offices for a period (Rupiah)
2	Number of employees	Number of people who working in branch offices
3	External agent (Perisai)	Number of agents in branch offices to help for acquisition
Output		
1	Paid Contribution	Amount of paid premium from the participants in end of periods (Rupiah)
2	Number of new participants	Accumulation of new participant in end of periods (worker)
3	Number of active participants	Number of active participants in end of periods
4	Number of new firms	Accumulation of new firms which joining as participants in end of periods
5	Number of active firms	Number of active firms in ends of periods

IV. RESULT AND DISCUSSION

1. Statistic Descriptive

Table 3 Mean of Input and Output Variables

Variables	2019	2020	Growth (%)
Input			
Operational Cost (in thousand Rp)	7.121.746	5.502.625	-22,7
Number of employees	47	46	-2,6
External agent (Perisai)	11	12	6,6
Output			
Paid Contribution (in millio Rp)	1.412.062	1.395.471	-1,2
Number of new participants	283.022	204.547	-27,7
Number of active participants	476.187	408.438	-14,2
Number of new firms	2.676	1.058	-60,5
Number of active firms	6.925	6.314	-8,8

Table 2 compares the mean of input and output indicators during two years between 2019 and 2020. It is explained that in 2020, most of both variables experienced declining averagely, excluded External Agent variable.

The input variable for Operational Cost reduced by about 22 percent from 2019 since it is funded by contribution fee revenue. Therefore, when the unemployment rate rises, fewer people would participate, which would lead to a decrease in the cost of operating the business. Additionally, there was no personnel recruitment at the branch offices in 2020, therefore the average barely changed. Turning to the output variables, all of variables reduced significantly in 2020, especially Number of New Firm which declined around 60 percent. However, the branch offices are still receiving premiums, at least in an amount comparable to previous year. It is determined that the branch offices continue to operate satisfactorily.

2. Efficiency Analysis

Tabel 4 Mean of Efficiency Value

Year	CRS	VRS	Scale
2019	0,76	0,88	0,87
2020	0,85	0,91	0,93

Tabel 4 above illustrates the efficiency value of branch offices averagely in two years. It could be seen that the level efficiency grew in all of types, respectively. Generally, the branch offices had optimized their resources well, since the figure had approach value of 1. In 2019, by Variable Return to Scale (VRS) approach, the mean of efficiency had reached at 0,88. It is referred that the branch offices had utilized their inputs around 88 percent to get outputs, and still had a space around 22 percent to be maximized. Then, in 2020, this figure increased at 0,03 which meant that the branch office had incline their performance although the economic in deteriorated condition. On a scale, these branch offices had a higher efficiency value, which were 0,93. It is defined that branch offices were able to function as closely as feasible to their most productive scale size.



Fig 2. Efficiency Result in 2019 and 2020

Figure 2 illustrated the number of branch offices in two condition, efficient and inefficient, during two years. Based on the figure above, the efficient branch offices have added up in 2020 to be compared to the previous year. In 2019, less than a half of branch offices had an efficient performance, which only around 12 offices. Those brach offices are Medan Kota, Pekanbaru Kota, Jakarta Grogol, Jakarta Kebon Sirih, Jakarta Slipi, Sukabumi, Karawang, Surakarta, Sidoarjo, and Pontianak. Then, in 2020, the efficient branch offices become 17 offices. The branch offices that named Jakarta Gambir and Surakarta changed to be inefficient in current year. Meanwhile, there were seven branch offices that had improved to be efficient like Palembang, Jakarta Menara, Bandung, Bogor, Semarang, Yogyakarta, and Bali. Besides all of those branch offices, they were still operated efficiently in two years.



Fig 3. Return to Scale Condition.

Figure 3 described about the return to scale condition of branch offices during 2019-2020. It could be seen that most of branch offices operated in Increasing Return to Scale (IRS) in two years. In 2019, the scale were dominated of IRS at 17 branch offices, meanwhile only seven branch offices which had Decreasing Return to Scale (DRS), and six branch offices in CRS. It meant that the productivity of 17 branch offices would be added by increasing the number of inputs, 7 others would experience decreasing productivity, and the rest would remain constant. Regarding to 2020, it had similar number of branch offices which had mostly IRS condition.

Table 5 Potential Improvement

Year	Number of New Participants	Number of Active Participants	Number of New Firms	Number of Active Firms
2019	27.473.845	39.512.892	591.075	223.734
2020	20.238.743	7.681.695	57.985	32.682

Table 5 above describes the potential improvement of each outputs. It could be explained that there four output that should be improved, excluded Contribution Revenue. Potential improvement is the difference between target output that should be reached and the current output. In 2019, there were still big gaps that should be achievable

by using the existed resources. In total, all of branch offices still had deficiency approximately 27 million of new participants, 39 million of active participant, 600 thousand of new firms, and 200 thousand of active firms, respectively. In 2020, all of those outputs still should be improved, yet, all figures were fewer than the previous year. It meant that the branch offices had better performance. Although the Covid-19 have impacted to social security agency's performance, these branch offices had optimized their resources more efficient to fulfil the target operation.

VI. CONCLUSION

Based on the analysis results that have been arranged above, it could be concluded that more than half of branch offices still have not reached perfect efficiency. In 2019, there were 12 branch offices which had become efficient in operation, and the rest was still inefficiency. Yet, all of agencies improved their productivity and operated effectively. It was evidenced in 2020, the number of efficiency branch offices were grown up to be 17 branch offices. Then, in VRS approach, most of them had high value efficiency towards 1. The smallest efficiency value that was reached by the branch offices at 0,6 for 2019 and 0,64 for 2020. Lastly, four outputs that consist of new participants, active participant, new firms, and active firms should be improved for both of years. Some suggestion that could be provided to increase efficiency value are maximizing the usage of all inputs, strengthening the role of external agents to approach the informal sector, then collaborating to the government and law enforcement to oblige every worker in their regions to be registered in social security program for employment. Eventually, massive socialization is still needed to build brand awareness from the society.

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Author Profile

Krisna Winda Putri

Magister Student in IPB University