ASSESSING PROMOTIVE AND PREVENTIVE PROGRAMS EFFICIENCY IN INDONESIA: A DATA ENVELOPMENT ANALYSIS AND QUALITATIVE APPROACH

Menilai Efisiensi Program Promotif dan Preventif di Indonesia: Data Envelopment Analysis dan Pendekatan Kualitatif

Mazda Novi Mukhlisa[1]*, Windi Haryani[1], Indra Yoga[1], Rosa Estetika[1], Wahyu Nugraheni[2]

[1]Center for Health Financing and National Health Insurance, Ministry of Health, Jakarta
[2]National Institute of Health Research and Development, Ministry of Health

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ABSTRACT

Health Operational Aid for promotive and preventive programs increases year by year. Despite that, health outcomes remain low. The objective of our study was to measure the technical efficiency of public health programs. We conducted a quantitative approach using Health Production Model to measure the efficiency of 315 districts across 34 provinces in Indonesia. To measure the efficiency score, we run the Data Envelopment Analysis. We also conducted a qualitative one to explore the source of inefficiency by managing interviews and focus group discussion to informants from six districts. The results indicated a wide variation in efficiency among districts. The average efficiency score was 63% with minimal and maximal scores were 15% and 100%, respectively. The high performing districts were in affluent or accessible areas. The qualitative analysis resulted in districts with the mixed planning process and the exact basis for budget distribution, as well as various criteria for priority setting, have higher performance than those which have not. Moreover, there were specific cases played a role in the low performing districts, such as the high-risk population in remote areas and the vaccines issues on halal status. In conclusion, districts still can improve their efficiency in achieving health output using their health resources.

Keywords: health operational aid, data envelopment analysis, efficiency score

ABSTRAK

Bantuan Operasional Kesehatan (BOK) yang digunakan untuk membantu upaya program promotif dan preventif meningkat setiap tahunnya. Akan tetapi, keluaran kesehatan tetap rendah. Tujuan analisis ini adalah menilai efisiensi teknis pada program kesehatan masyarakat yang menggunakan BOK. Dengan menggunakan Model Produksi Kesehatan, kami melakukan pendekatan kuantitatif untuk mengukur skor efisiensi di 315 kabupaten/kota di Indonesia. Skor tersebut diukur dengan Data Envelopment Analysis. Kami juga melakukan pendekatan kualitatif untuk menggali lebih dalam tentang sumber inefisiensi dengan melakukan wawancara dan diskusi kelompok terarah kepada informan di enam kabupaten/kota. Hasil analisis menunjukkan bahwa terdapat variasi skor efisiensi antar kabupaten/kota. Rata-rata efisiensi adalah 63% dengan skor minimal sebesar 15% dan maksimal sebesar 100%. Kabupaten/kota dengan skor efisiensi tinggi berada di area kaya atau mudah diakses. Hasil kualitatif menunjukkan bahwa kabupaten/kota dengan perencanaan bottom-up yang dikombinasikan dengan top-down, kepastian dasar pembagian distribusi, dan beberapa kriteria untuk setting prioritas memiliki skor efisiensi yang tinggi. Masalah khusus yang dihadapi kabupaten/kota juga berperan dalam inefisiensi, seperti populasi berisiko tinggi di daerah terpencil atau isu halal/haram vaksin. Secara garis besar, kabupaten/kota masih berpotensi meningkatkan efisiensi dalam mencapai output kesehatan dengan menggunakan sumber daya kesehatan yang dimilikinya.

Kata Kunci: *bantuan operasional kesehatan, data envelopment analysis, skor efisiensi*

Corresponding Author:
Mazda Novi Mukhlisa
Center for Health Financing and National Health Insurance, Ministry of Health, Jakarta
mazdanovi@gmail.com

INTRODUCTION

Indonesia's health expenditure in 2016 was at 3.3% of GDP as reported in National Health Account (NHA) and mostly allocated for curative and rehabilitative care. Besides, only 9.6% of total fundings were intended to support both promotive and preventive care (Kementerian Kesehatan RI and Fakultas Kesehatan Masyarakat Universitas Indonesia, 2018). In order to support the current cares, the government provides transfer funds through Health Operational Aids (BOK) allocated by local government.

BOK budget increases every year. The highest one was 93% in 2016 since there was reallocation in fund channeling from the assistance task into special assignment funds. The budget was achieved Rp 4.8 trillion in 2017 (Kementerian Kesehatan RI, 2016), which increased into Rp 2.3 trillion from 2016 (Kementerian Kesehatan RI, 2015b).

By increasing the budget for promotive and preventive programs, the utilisation will be optimium. The percentage increased significantly from 2013 to 2018 from 70.4% (Kementerian Kesehatan RI, 2013) to 76% (Kementerian Kesehatan RI, 2018) and from 71.3% (Kementerian Kesehatan RI, 2013) to 84.1% for both antenatal and neonatal care respectively (Kementerian Kesehatan RI, 2018). In the contrary, the complete basic immunization coverage decreased from 59.2% (Kementerian Kesehatan RI, 2013) in 2013 to 57.9% (Kementerian Kesehatan RI, 2018) in 2018. It means the national coverage from 2015-2018 was out of the target (Kementerian Kesehatan RI, 2015a). Even though, the coverage increased, maternal mortality ratio was still around 300 maternal deaths per 100,000 live births from 1994 to 2014 (Agustina *et al*., 2018). Whereas neonatal mortality slightly decreased 25% in 2017 (from 20 deaths in 2002-03 to 15 deaths per 1,000 live births) (BKKBN; BPS; Kementerian Kesehatan RI; USAID, 2018).

By the increase of health budget, especially BOK, the government needs to assess quality of health spending by conducting efficiency analysis to ensure that health resources have been used properly.

METHODS

This study was a cross-sectional design with mixed both quantitative and qualitative approaches. The quantitative approach generated from administrative data provided by the Ministry of Health. The qualitative one was gained from interviews and focused group discussions to six districts. The population was 514 districts across 34 provinces in Indonesia. The samples were 315 which had the complete data. The sample excluded the outlier data.

The study adapted DaVanzo dan Gertler's Health Production Model (DaVanzo and Gertler, 1990), which also used by Peacock, *et al.* (Peacock *et al*., 2001) and Heredia-Ortiz (Heredia-Ortiz, 2013). Efficiency is a combination between inputs and outputs (Aday *et al*., 2014). Input variables consists of BOK Puskesmas (Primary Health Care) spending per capita (in rupiah) disaggregated by the program such as maternal, neonatal and infant, under-5-year weighed and preschool health and immunization. Moreover, human resources for health consist of a percentage of at least one doctors per Puskesmas, of at least four midwives per Puskesmas, of at least five nurses per Puskesmas, and ratio of public health workers and nutritionist at Puskesmas. Besides, the ratio of Puskesmas per subdistrict and Posyandu (Integrated Health Care Post) is per 100 under-5-years.

There are four outputs such as the antenatal care coverage, the neonatal coverage, the under 5 years weighed equal or more than 4 times visit and the complete basic immunization coverage. The antenatal care coverage is defined by numbers of pregnant women who receive antenatal care for at least 4 times by health professional compare to number of targeted pregnant women. The neonatal coverage is defined by number of newborns at age 6-48 hours who receive at least one neonatal visit compared to number of livebirths. Whereas, under 5 years weighed equal or more than 4 times visit is calculated during the last six months. The complete basic immunization coverage is for babies aged 0-11 months who received a dose of Hepatitis B, BCG and measles, three doses of DPT-HB-Hib and four doses of poliomyelitis.

Variable Return to Scale (VRS) – Data Envelopment Analysis (DEA) with an output-oriented model was conducted to address the relative efficiency score of each district. We selected VRS as it is more flexible rather than constant return-to-scale (CRS) and not all districts operating at an optimal scale (Hafidz *et al*., 2017). We assumed that health inputs such as budget, health human resources, and health facilities are under the government control. Therefore, the increasing or decreasing in health input is considered undesirable. However, increasing in health output is considered feasible (Oikonomou *et al*., 2016). Therefore, we used output-oriented

assumption as preferred by Cheng *et al.* (Cheng *et al*., 2016), Hafidz et al (Hafidz *et al*., 2017), and Oikonomou *et al.* (Oikonomou *et al*., 2016). With ouput oriented assumption, each district is expected to maximize its health output using current inputs (Hafidz *et al*., 2017). We also weighed input and ouput variables since both had more than one variable (Agrobisnis Perikanan Universitas Brawijaya, 2016; Oikonomou *et al*., 2016).

To explore the inefficiency, we interviewed local planning agency and organised focused group discussion to the program holders and BOK treasurers or managers in several districts such as Banjar, Agam, Maros, Bengkulu Tengah, Tanjung Pinang and Musi Banyuasin. Six dictricts were selected purposively based on the BOK spending per capita. Some information collected were the planning and budgeting, the implementation, and the monitoring evaluation. No ethical clearance was needed to this study.

RESULTS

Table 1 presents characteristics of input and output variables. The results showed that there is a wide variation in either input or output variables. The variations of BOK spending per capita at four programs were very wide, with only from less than one rupiah to hundred thousands rupiah. This study also reported that there was one district with insufficient numbers of health care professionals as well as Puskesmas per subdistrict. It also did not achieve the national target on the four programs.

At national level, the BOK-Puskesmas spent 81% from allocated budget for promotive and preventive program in Puskesmas. The highest spending was in North Maluku at 96% and the lowest one was in DKI Jakarta at 35% (see figure 1).

Figure 2 presents the share of BOK-Puskesmas spending by the program. The highest budget allocated for health promotion was at 355 billion rupiahs. The lowest one was 25 billion rupiahs for surveillance and outbreak response. Meanwhile, the highest spending was on the maternal health at 85%, and the lowest one was 74% for the information system.

Figure 3 shows the scatter plot of relative efficiency scores for 315 districts in Indonesia. Only few districts had the efficiency score equal to 1 with average score 63%. It indicated that there was 37% inefficiency to achieve the health output.

We also divided the districts into four quadrants based on the median value of both input and output indexes. This quadrant is to facilitate decision-makers in determining districts that become a priority to achieve efficiency. According to figure 3, decision-

Table 1. Descriptive statictics

Variables	N	Mean	SD	Min	Max
Input Variables					
Antenatal care spending (IDR)	315	112,530	99,457	2,955	638,040
Neonatal spending (IDR)	315	48,919	60,421	12.90	525,259
U-5 weighed spending (IDR)	315	17,763	17,282	0.0237	132,242
Immunization spending (IDR)	315	77,403	80,923	59.52	856,858
Doctor sufficiency	315	74.76	24.40	0	100
Nurse sufficiency	315	77.41	23.71	0	100
Midwive sufficiency	315	81.45	27.95	0	100
Health environment worker by Puskesmas (%)	315	1.217	0.688		4.833
Public health by Puskesmas (%)	315	1.589	1.351	0.0370	9.333
Nutritionist by Puskesmas (%)	315	1.320	0.743	0.0541	6.125
Puskesmas by sub-district ratio	315	1.547	0.659	0.684	7.800
Posyandu by 100 under 5-years ratio	315	1.583	0.715	0.0143	4.492
Output Variables					
Antenatal coverage (%)	315	82.81	13.13	41.39	117.3
Neonatal coverage (%)	315	89.03	13.46	37.58	121.8
U-5 Weighed coverage (%)	315	76.78	11.65	41.71	97.31
Basic complete immunization coverage (%)	315	89.48	12.33	56.56	130.2

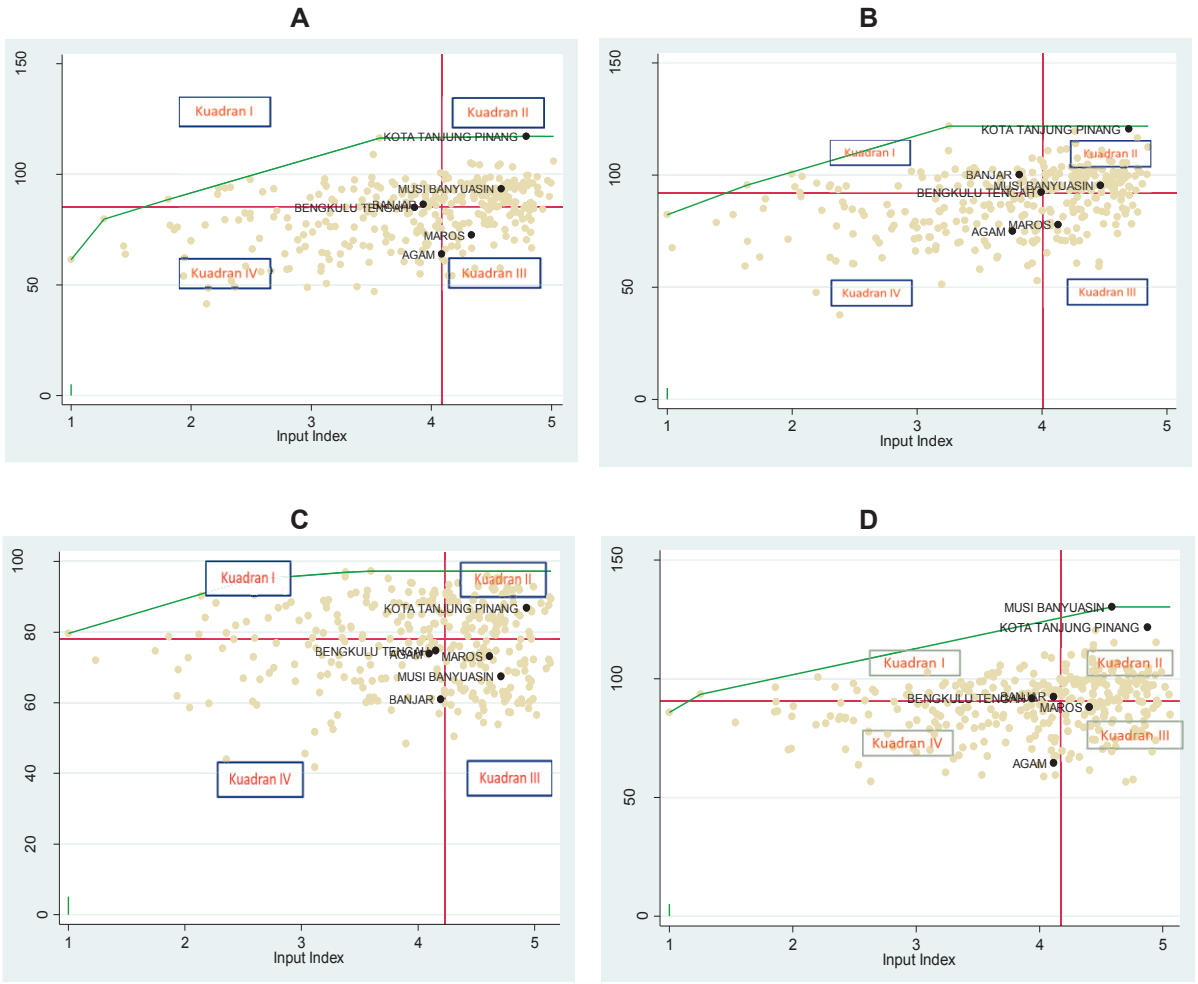

Figure 1. BOK-Puskesmas Spending by Province (Source: Bureau of Planning and Budgeting, MOH)

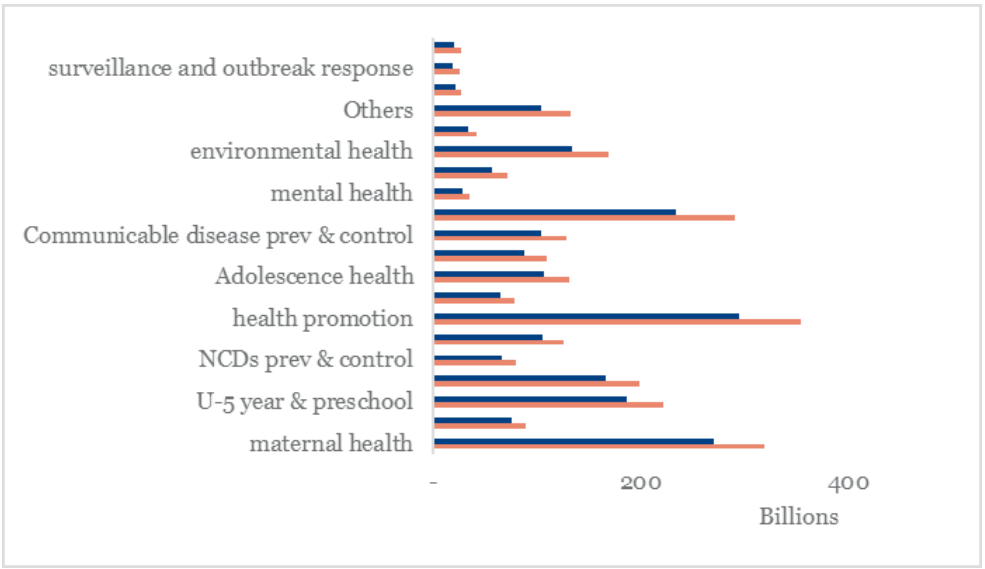

Figure 2. Share of BOK-Puskesmas Spending by Program (Source: Bureau of Planning and Budgeting, MOH)

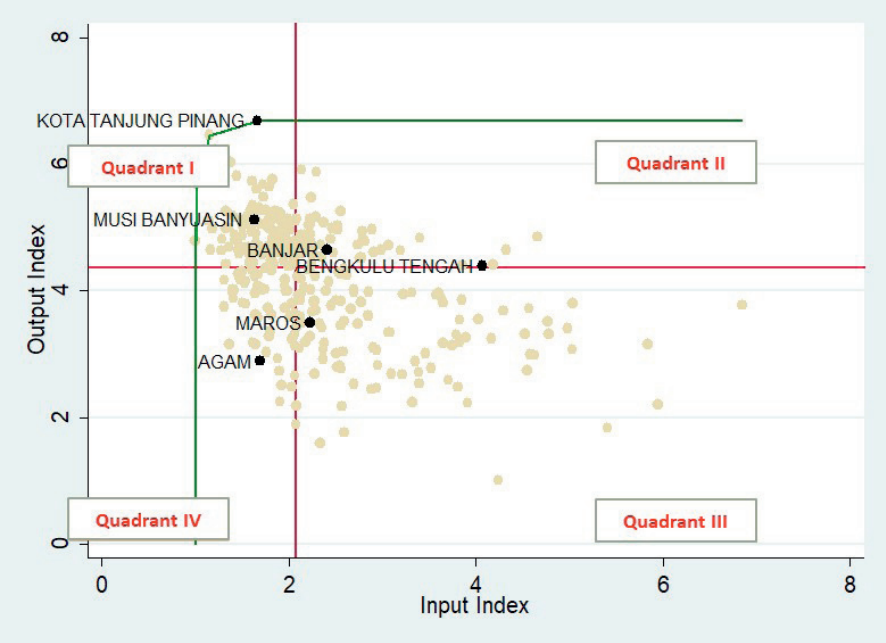

Figure 3. Efficiency scores of 315 districts

makers need to pay more attention to districts in quadrant III as they use more health inputs, but their health output is lower than other districts.

The results found that there were differences between efficient and inefficient districts. Districts categorized as efficient carried out mixed planning process (bottom-up and top-down). It means the planning was conducted by getting the community's input through such activities as Survei Mawas Diri (SMD) and Musyawarah Masyarakat Desa (MMD). All inputs were discussed at the district level, and feedback was directly given to the community. On the other hand, in the inefficient districts applied top-down planning. The district level decided the programs due to input delay from Puskesmas/community.

In the budgeting process, the efficient districts had clear criteria for allocating budget involving the number of population, Posyandu, schools, health workers and the like. More budgets were allocated to the national priority programs and previous year health issues. On the contrary, the inefficient districts had no clear criteria for allocating their budgets. They refered to the past health issues and prioritized their own interest there was still an ego in allocating the budgets.

The efficient districts actively implemented the programs done by their health workers. These involved several activities such as carrying out home visits and sweeping for the absence of babies following the immunization schedule, raising public awareness by disseminating health information or health contest, and giving a free voucher for immunization. Meanwhile, the conditions that occurred in inefficient districts were not similar that the health workers faced some problems in accessing the areas of their scheduled programs.

In general, all districts implemented monitoring and evaluation. However, the inefficient districts performed less in planning and budgeting. Besides, we indicated that the source of funding for activities in Puskesmas was dominated by BOK for promotive and preventive programs and the National Health Insurance (JKN) capitation for curative and rehabilitative programs. The local government budget was merely limited. The allocation was only for paying overhead costs such as electricity, water, telephone, and newspapers.

Districts had common problems related to BOK utilization, which were workload and transportation costs. In term of workload, puskesmas health worker has a double role as BOK treasurer and professional who serve patients. Regarding transportation costs, reimbursement costs are smaller than what is determined by the central governments. Therefore, the synchronized coordination between central and local government is crucial to be do. Another current issue was the status of the vaccine. It is whether or not acceptable for muslim or usually called halal.

DISCUSSION

We utilised administrative data from Ministry of Health. The missing data was due to incomplete data related to the absence in reporting to the MoH as well as zero budget in particular program analysed. We also visited six districts considered representing Indonesia. Despite the shortcomings of the study, the results are useful for decision makers in providing an overview of the quality of Health Operational Funds or BOK spending. In addition, the qualitative results enrich the DEA results by describing sources of inefficiency.

BOK is a fund prepared by the national government to be managed by the local government for financial support to promotive and preventive programs at the district level, either at Puskesmas, community health centers or district health office (Kementerian Kesehatan RI, 2016). Increasing BOK budget every year indicates that the government pays more attention to promote health and to prevent illness.

DEA results showed that there was inefficiency in achieving health outputs. However, those districts might be able to improve their health output by utilising their current health resources. To improve efficiency, the districts should focus on the mixed approach planning or the combination of both the bottom-up and the top-down planning. The bottom-up planning encourages community participation in the health programs implementation (Riedel legi *et al*., 2015) and is able to address the community needs in the right way (K.Roy and Ganguly, 2009). Programs whose planning is arranged with bottom-up approach are always acceptable and get support from community in their implementation (Riedel legi *et al*., 2015). Meanwhile, top-down planning is also needed as a proactive planning strategy (K.Roy and Ganguly, 2009) to align with national and regional priority.

For the budget allocation, the districts should have clear criteria in order to make budget allocated appropriately in accordance with programs priority. A priority setting is important in detecting both the efficiency and effectiveness of health program. It is necessary to consider development priority, district responsibility, measurable target and its financing in the work plan (Info Anggaran, 2014). To control the efficiency and effectiveness of budget, the district needs to consider a clear goal and the objectives, the results and benefits, performance indicators, the priority setting, workload consideration, as well as unit costs of the health program (Yuliastati K, 2017).

Health program implementation, especially promotive and preventive programs at district level, mostly uses BOK funds, whereas curative and rehabilitative uses JKN funds. At six districts, their local government budgets were only allocated for several overhead costs such as the electricity, the telephone and water, as well as the newspaper. Our concern was the regulation stated that districts which received DAK must provide additional funds at least 10%. The exception was given to specific districts with certain fiscal capabilities.

Programs implementation is also influenced by the geographical location. Ramanathan, *et al.* (2003) and Rattanachotphanit, *et al.* (2008) in Hafidz (Hafidz *et al*., 2017) stated that accessible health facilities have better health services utilization thereby increasing productivity of health facilities. Therefore, a city like Tanjung Pinang, which is smaller and easly accessible, has better efficiency score than other districts.

CONCLUSION

Districts still can increase their health outputs by utilizing their health resources. Mixed approach planning has to be referred to meet the population needs in order to improve efficiency. By managing BOK appropriately, districts need to carry out monitoring and evaluation as the input for doing the planning. In addition, synchronizing regulations between central and local government is more than crucial.

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