

# Productivity, Income: A Case of Indonesia Health Care Centers

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## Abstract

Indonesian health centers (*Puskesmas*) have both inpatient and outpatient care units and are allowed to treat 144 illness types. However, the Indonesian health centers mostly failed to generate sufficient income to cover their operations. This study aims to examine the influence of productivity on the income of health centers in Indonesia. The samples of this research are 102 health care centers located in 14 regencies within Aceh Province, Indonesia. Data was collected through questionnaires and the respondents are 375 managers of the health centers. Using regression analysis, this study found a positive and significant influence of productivity on income. Thus, it can be concluded that productivity is effective enough to improve the income of the healthcare centers.

Keywords: Productivity, income, health care center, Indonesia.

## 1. Introduction

Patient referrals in Indonesia are carried out in stages and systematically. *Puskesmas* is a primary healthcare facility in the patient referral system in Indonesia [1]. However, many patients use the service and go to the hospital for treatment, even though the *Puskesmas* can provide services and treat 144 types of diseases [2]. *Puskesmas* are often the place to get unnecessary referrals to the next level of service facilities [3]. As a result, there has been a surge in visits to Regional General Hospitals which can be attributed to the low quality of service of the *Puskesmas* organization [4]. The low quality of service can be associated with low productivity support, therefore that the *Puskesmas* income is not optimal [5].

Similar to other regions in Indonesia, the 102 Inpatient Health Centers in Aceh have fluctuating and low incomes. This indicates low productivity, as [6], that productivity is affected by demand, if demand is low, service provider resources will be underutilized, which means internal efficiency or revenue will decrease. The low income of *Puskesmas* is correlated with service quality [7]. This happens because productivity is not optimal. After all, the application of productivity, especially the service process, depends on the progress of conceptualization and measurement of service productivity [8]. Likewise, the empirical literature conducted in other developing countries, it shows that the low income of Inpatient Health Centers is caused by the productivity of employees and or management of *Puskesmas* that are not optimal. We suspect this will also happen in Indonesia.

Although there is research on productivity that affects the income of Inpatient Health Centers, holistic research is still very limited, such as research [6] which found that productivity affects service providers not income, however is mediated by service quality [9]. It was discovered that productivity affects user loyalty and productivity has no correlation with income depending on other factors such as nature, patient characteristics, and waiting time. On the other hand, research [10] finds that productivity remains and does not change the effect of budget policy on service quality, but can strengthen the effect of cost control to earn revenue.

Productivity has a direct and significant positive effect on the growth of quality output [11]. The existence of research gaps regarding productivity that affect *Puskesmas* income which was developed from the theory and theoretical contradictions of several previous studies on income and is still being debated because of the diversity of models, methods, and predictors, becomes the urgency and motivation of this research to bring up alternative development and increase the income of Outpatient Health Centers. Hospitalization, by offering several approaches to fill the research gap, namely the organizational theory approach, Blum theory, systems theory, and resource theory to improve productivity which has an impact on increasing income, where productivity is a key variable that affects income and is the novelty of this research. Based on the problems described above, this study aims to test whether productivity can increase the income of *Puskesmas* in Indonesia. While the research questions are: Is income affected by the productivity of Inpatient Health Centers in Aceh, Indonesia.

## 2. Methods

This type of research is descriptive, verification and explanatory with survey methods. This study was conducted in Aceh, Indonesia. The object of this research is productivity and income with the unit of analysis is the Inpatient Health Center. Using the type of primary data whose data source is from the management that has been determined during the research period which was carried out in September – December, 2020. The population is Public Health Centers and sampling uses purposive sampling by determining Inpatient Health Centers and management in 14 (fourteen) districts based on regionalization namely the central regional area, the South West, East and Central Aceh regions, Indonesia.

The number of samples is determined using the slovin formula ( $n = \frac{N}{1+N(5\%)^2}$ ), where to get  $n = \frac{137}{1+137(5\%)^2} = 102$  Inpatient Health Centers as a randomly selected sample. Data was collected by distributing questionnaires that had been prepared for 375 management as respondents. Ordinal measurement scale using Likert Scale Summated Rating [12]. The variables of this study consist of productivity and income as shown in Table 1.

Table. 1. Operational research variables.

| No | Variable     | Variable Definition                                                                                                                                                                                                                                          | Indicator                                                                                           | Source                          |
|----|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------|
| 1  | Productivity | An operation is related to how the growth of resource inputs is effectively transformed in a process (service process) therefore it becomes more economical, efficient, and has benefits for management. [6]                                                 | 1. Input growth<br>2. Output growth<br>3. Improved efficiency.                                      | [11], [13],<br>[14], [8], [15]. |
| 2  | Income       | Revenue earned by charging patients through financial analysis based on medical needs or health service fees, estimated patient visits, costs and benefits of each service level unit including hospitalization projected by clamping to the government.[16] | 1. Payment of patient visit rates<br>2. Contribution of service units.<br>3. Inpatient Productivity | [7], [17]                       |

The data analysis used is descriptive analysis and verificative analysis with an analytical technique as Linear Regression Analysis. The initial measure that must be taken before getting simple linear regression is to determinewhether the data used has already contents the classical assumptions including Normality test [18], Multicollinearity test [19], Heteroscedasticity test [20] and Linearity test.

The model feasibility test is used to assess the accuracy of the sample regression function in estimating the actual value. Statistically it can be measured by the coefficient of determination [20]. Furthermore, a simple linear regression analysis test was performed. To analyze the interaction between the independent variable and the dependent variable, simple linear regression analysis is used.[20]. Testing the hypothesis in this study using the t test. The t test is used to partially prove the effect of the independent variable on the dependent variable [20].

## 3. Results

Respondents returned the questionnaires through volunteers or the researchers themselves. Of the 408 questionnaires distributed, all of them returned, but only 375 respondents answered consistently, the remaining 33 respondents answered inconsistently. Most of the respondents were married, ethnically Acehnese, female, >30 years old, graduate and work in government. The average of the productivity and income variables as a whole with the index value weight category is  $3.204 < 3.41$ , thus it can be concluded that the state of productivity and income is not good. From the results of the analysis of 12 questions/statements to measure all variables in this study, all of them are valid, because  $r \text{ count} > \text{from } r \text{ table and reliable, because Cronbach's alpha} > 0.06$ .

Based on Table 2, it can be concluded that the research questionnaire is valid and reliable, therefore it can be used as a data collection instrument. Furthermore, the classical assumption test showed normal data, not multicollinearity, heteroscedasticity and linear.. Table 4 summarizes the results of the simple Linear Regression Equation test. According to Table 4, it is certain that the regression equation is  $Y = 1.690 + 0.492X$ . Interpretation of research results obtained constant coefficient value of 1.690, productivity coefficient value of 0.492. This means that if productivity is considered constant, income will increase by 1.690. If productivity increases by 1 level then income will increase by 0.492 assuming other variables remain. X (Productivity) Against Y (Revenue).

Based on Table 4, it appears that the productivity variable (X) obtained t count of 5.998 > t table (1.98373), with a P-value of 0.000, a value <0.05. It is possible to decline  $H_0$ , meaning that productivity affects income. The Coefficient of Determination Test was conducted to determine the degree of correlation between the two variables  $r_{X,Y}$ . Testing of the structural model is done by looking at the R Square value which is the quality of Fit model test which can be seen in Table 4. According to Table 4, the correlation coefficient (R) is 0.514, meaning that the relationship between the independent variable and the dependent variable is 51.4% and the R Square ( $R^2$ ) value is 0.265. This means that the ability of the independent variable in explaining the variation of the dependent change is 26.5%.

Table 2. Assessment criteria and linear regression measurement and structure.

| No | Test Type          | Parameter                          | Criteria        | Source |
|----|--------------------|------------------------------------|-----------------|--------|
| 1  | Validity           | Correlation coefficient            | r-count > table | [21]   |
| 2  | Reliability        | Alpha Cronbach                     | >0.6            | [22]   |
| 3  | Normality          | Kolmogorov Smirnov                 | >0.5            | [23]   |
| 4  | Multicollinearity  | VIF                                | <10             | [19]   |
| 5  | Heteroscedasticity | Glejser Test                       | >0.05           | [20]   |
| 6  | linearity          | Linearity Test                     | <0.05           | [24]   |
| 7  | T test             | P-Value (Sig.t)                    | <0.05           | [19]   |
| 8  | R test             | Coefficient of Determination       | 0-1             | [20]   |
| 9  | Regression         | Coefficient of Regression Equation | t-count > table | [20]   |

Table 3. Outer Loading.

| No | Variable     | Indicator                  | Code  | Loading |
|----|--------------|----------------------------|-------|---------|
| 1  | Productivity | Input Growth               | PR 6A | 0.609   |
|    |              |                            | PR 6B | 0.690   |
|    |              | Output Growth              | PR 7A | 0.707   |
|    |              |                            | PR 7B | 0.715   |
|    |              | Efficiency Improvement     | PR 8A | 0.709   |
|    |              |                            | PR 8B | 0.761   |
| 2  | Income       | Payment of patient visits  | P 9A  | 0.424   |
|    |              |                            | P 9B  | 0.652   |
|    |              | Service unit contribution. | P 10A | 0.480   |
|    |              |                            | P 10B | 0.596   |
|    |              | Inpatient Productivity     | P 11A | 0.641   |
|    |              |                            | P 11B | 0.722   |

Table 4. Simple linear regression analysis test results

| Variable                   | Unstandardized Coefficients |                  | Standardized Coefficients | t     | p-value |
|----------------------------|-----------------------------|------------------|---------------------------|-------|---------|
|                            | B                           | Std. Error       | Beta                      |       |         |
|                            |                             |                  |                           |       |         |
| Constant                   | 1.690                       | 0.261            |                           | 6.477 | <0.001  |
| Productivity               | 0.492                       | 0.082            | 0.514                     | 5.998 | <0.001  |
| Dependent Variable: Income |                             |                  |                           |       |         |
| R : 0.514                  |                             | R Square : 0.265 |                           |       |         |

#### 4. Discussion

According to the results, productivity is useful and may increase the income. In agreement with research conducted by [25], if productivity increases, income will also increase, because income can be measured from productive investment receipts. Furthermore, the results of this study show empirical evidence that the productivity variable has a significant effect on increasing the income of the Puskesmas, therefore the results of this study confirm the research conducted by [6] which found that productivity has a significant positive effect on income, using a number of inputs in the form of efficient external, because income can be sourced from internal and external [26].

This study also found that if productivity is constant, income will increase by the same amount and if productivity increases, income will also increase. The results of this study show empirical evidence that the productivity variable has a significant effect on increasing the income of the Inpatient Health Center, thereby confirming the research conducted by [27] which found that productivity had a significant positive effect on income. In line with research [28] which concludes that, effective planning and efficient service delivery increase competitiveness and income, meaning that productivity has a significant positive effect on income.

The findings of this study also conclude that there is a relationship between the independent variable and the dependent variable which is quite strong and the ability of the independent variable to explain the variation of the dependent change is 26.5%, while the remaining 73.5% is explained by other factors outside the regression model analyzed and or influenced by other variables and factors that were not used in this study. This is in line with research [11] which concludes that productivity is related and integrated with demand, one of which is efficiency, which is a function of productivity [6] which can increase income.

This research is limited to the scope of the *Puskesmas* only, excluding all organizations that influence the income of the *Puskesmas*, both of the Government, the community and other stakeholders, such as the Regional Financial, Wealth and Asset Management Agency (BPKKAD) and the Health Office. This research is limited to productivity variables, it is better to examine other factors that influence income by considering a wider sample, so that the conclusion can produce wider coverage in all Inpatient Health Centers in Indonesia registered with the Indonesian Ministry of Health. This research is limited to health centers only, should be able to consider the effect of the Health Insurance Administration Agency (BPJS) on increasing *Puskesmas* revenue. It is necessary to implement productivity to increase the income of Inpatient Health Centers in Aceh. It is necessary to have training in *Puskesmas* management that is oriented towards increasing productivity and increasing the income of the *Puskesmas*. It is necessary to consider making the *Puskesmas* as a regional work unit (SKPD) or a regional public service agency (BLUD), so that the *Puskesmas* has broad authority to increase productivity and income.

## 5. Conclusion

This study found that productivity has an effect on the income of *Puskesmas* in the Aceh region. Inpatient *Puskesmas* must make improvements related to their productivity on a regular basis and analyze more deeply the factors that can affect the increase in income. Inpatient *Puskesmas* to be more oriented by creating superior service activities than the current ones, so as to increase productivity and income. This research can be used as an evaluation material in formulating a strategy to increase income, because productivity can increase income. The Regional Financial, Wealth and Asset Management Agency (BPKKAD), the Health Service and the Regional Government, set a rational revenue target. Making the *Puskesmas* as a Regional Public Service Agency (BLUD) and placing the right management of the *Puskesmas*. The Social Security Administering Body (BPJS), should support *Puskesmas* in increasing revenue by making appropriate regulatory provisions.

## Acknowledgment

The author would like to thank Universitas Teuku Umar and all the staff for the assistance during the study.

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