

# Budget Policy, Productivity: A Case of public health centers in Indonesia

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**Abstract:** *Indonesian health centers (puskesmas) have both inpatient and outpatient care unit and are allowed to treat 144 illness types. However, the Indonesian health centers mostly failed to generate sufficient productivity to cover their operations. This study aims to examine the influence of budget policy on the productivity 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 budget policy on productivity. Thus, it can be concluded that budget policy is effective enough to improve productivity of the health care centers.*

**Keywords:** budget policy, productivity, health care center, Indonesia.

## 1. 1. Introduction

Indonesia has a tiered and procedural patient referral system. Puskesmas is the first level health service facility in the patient referral system in Indonesia. However, many patients use services and seek treatment at hospitals, even though Puskesmas can provide services for 144 types of diseases (PKKI 11/2012; PMK 5/2014). Community health centers often become a place to get unnecessary referrals to the next level of service facilities (Gross & Nirel, 1997). As a result, there was a surge in visits to Regional General Hospitals, which could be attributed to the low productivity and quality of services at the Community Health Center. The low productivity and quality of service can be attributed to low budget policy support, so that Puskesmas services are not optimal (Yuan et al., 2018; Ahmed et al, 2017).

Just like other regions in Indonesia, the 102 Inpatient Health Centers in Aceh have low and varied productivity. This indicates a low budget policy, as (Decoster et al, 2014; Dye & Mcguire, 1999; Grönroos & Ojasalo, 2004) say that fluctuations are measured from service activities which are productivity values. The low productivity of Community Health Centers is correlated with service quality (Atella et al., 2019; Hegji & Self, 2009). This happens because the budget policy is not appropriate, because all service improvements certainly require budgets and strategic and effective management (Fatima, 2018). Likewise, empirical literature conducted in other developing countries shows that the low productivity of Inpatient Health Centers is caused by budget policies that are low and not well targeted. We suspect this also happens in Indonesia.

Although there is research on budget policies that influence the productivity of Inpatient Health Centers, holistic research is still very limited (Eklom et al., 2020; Babalola & Moodley, 2020; Chen & Fan, 2015). There is a research gap regarding budget policies that influence the productivity of Community Health Centers which were developed from theory and theoretical contradictions in several previous studies on productivity which are still being debated due to the diversity of models, methods and predictors. The motivation for this research is to come up with alternatives for developing and increasing the productivity of Inpatient Health Centers by offering several approaches to fill the research gap using organizational theory, Blum theory, system theory and resource theory approaches to improve budget policies which have an impact on increasing productivity as a key variable.

Based on the problems described above, this research aims to test whether budget policy can increase the productivity of Community Health Centers in Indonesia. Meanwhile, the research questions are:

Is productivity influenced by the budget policy of Inpatient Health Centers in Aceh.

## 2. Library Review

### 2.1. Community Health Center Productivity Concept.

Community Health Centers are public sector organizations and as technical implementation units are required to report their performance (Bastian, 2010). Furthermore, which is no less important, Community Health Centers have various efforts, types of services, budgets (PMK, 43 2019) and various resources,

including human resources, money, materials, machines, policies and work areas as markets (G.R. Terry, 1977).

Productivity is the relationship between output and input (Cooper & Edgett, 2008) and a process related to how effectively input resources are transformed into value and depends on the resources required to achieve each goal with input, output and productivity indices (Grönroos & Ojasalo, 2004 ; Atella et al., 2019). Service productivity is a function of (1) how effectively resource inputs into the service process (production) are transformed into outputs in the form of services (internal efficiency), (2) how well the service process and its results are perceived (external efficiency) and (3) how well effective service process capacity is used (capacity efficiency)(Grönroos & Ojasalo, 2004). Measuring productivity is not only important for sound judgment. but also to define what is considered important at each level of the health system, key concepts including productivity and resource management, among others. Productivity is related to and integrated with demand (Atella, et al 2019), one of the other dimensions of which is efficiency, which is a function of productivity (Gronroos & Ojasalo, 2004) which can increase income.

Part of the function of organizational policy is to coordinate actions to reduce inefficiency and bad behavior, one of which is budget policy (Decoster et al, 2014). One of the goals of budget policy is to use organizational funds more efficiently and implicitly communicate appropriate and acceptable behavior (Kerr, 1975). Budget policies can influence commitment and cooperation between providers, management and the organization. Government policy in allocating the budget for the public interest which is manifested in the form of spending and/or investment as an intervention tool is called budget policy (Decoster et al, 2014). Budget policy focuses control more on aspects of budget, price, volume, supply, demand and market processes which, if unable to adapt, can make it difficult to achieve overall budget goals (Stadhouders et al, 2018). In health care whose budget is publicly funded, the relevant actors are, government, management and health service providers to increase productivity (Ellegård et al, 2019).

## 2.2. Theoretical basis.

This writing theory is taken from the Organizational Behavior theory (Robin, 2003), where the organization is a system that examines management behavior in an organization. In an organization, where one component is interrelated and at least consists of various activities, systems and resources, both as intermediaries and as support. For this reason, looking at the relationship between variables in this research requires another theory as an intermediary, namely the theory of the concept of healthy living. The concept of holistic healthy living, where the relevant theory to explain the relationship between variables is Blum's theory. Blum (1981) explained that health status is influenced by 4 (four) main factors as determinants of the emergence of health problems, one of which is the environment. The service environment has very broad dimensions, including in the context of the policy environment which can create productivity inequality as a cause of health disparities (Gronroos & Ojasalo, 2004; Dye, 1991). Inequalities in productivity and basic health services are interconnected with health status (She et al, 2002) and indicate access to health service management in a system.

Systems theory, where an organization basically consists of various components that are interrelated, relate and collaborate with one another to achieve common goals (Campbell, 1979). System components consist of input, process, output, outcome, impact, feedback and environment, all of which are interconnected and influence each other. In this research, of course there is a relationship between one variable and another variable using various resources, therefore an approach using resource theory is needed. Resource theory (Barney, 1991), says that an organization or service unit, is a place of tangible and intangible resources, and even has a competitive advantage if it is rare, valuable and original. Miller GT (2011), Resources are something useful that can be in the form of services, tools, knowledge and other assets that can be changed for use after a planning, organizing and controlling process is carried out. (George R. Terry, 1977) said there are six management resources, namely, people, money, materials, machines, methods and markets used in an organization. Thus, community health centers, which are functional organizations that have professional service activities (PM 43/2019), will have a greater role in increasing productivity if there is resource support with one method or organizational policy, in this case budget policy.

### 2.3. Hypothesis Development:

#### **Relationship between budget policy and productivity.**

Budget policy is related to the productivity of health service provision (Atella et al., 2019). The budget is related to many other factors at the input, process and output stages such as management and infrastructure (Gross & Nirel, 1997). All service improvements require effective budgets and cost management strategies (Fatima et al., 2018). Shahriari & Lewis (2001) in Lewis (2006) stated that low productivity in health services is due to an imbalance in the health service system. Working with inferior materials reduces productivity and efficiency because efficiency is interconnected with productivity (Grönroos & Ojasalo, 2004; Mosadeghrad, 2014). Internal efficiency and cost effective use of resources constitute service productivity (Grönroos & Ojasalo, 2004).

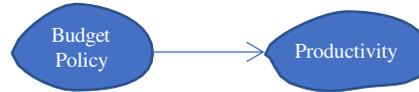
Budget constraints are positively related to service productivity (Meng et al., 2016). Efficiency in health services provides an indication of a better function and dimension of productivity (Fiaz et al., 2018; Parasuraman, 2005). Improved service will in time lead to more sales, resulting in faster financial returns as a form of productivity (Chi & Gursoy 2009). The productivity and creativity of public sector organizations increases efficiency and effectiveness (Yuan et al., 2018). Measuring productivity is not only important for sound judgment. but also to define what is considered important at each level of the health system, the key to which is productivity and resource management (Atella et al., 2019).

#### ***Hypothesis: Productivity is influenced by the budget policy of the Inpatient Health Center in Aceh***

#### **Research Model**

**Referring to the theoretical framework regarding the relationship between variables as explained previously, the model that will be tested in this research is as follows:**

**Figure 2.1**  
**Research Model**



Source: Theoretical basis, previous research, modified and developed by researchers (2021).

**3. Research methods**

**Research design**

This type of research is descriptive, verification and explanatory with survey methods. This research was conducted in Aceh. The object of this research is budget policy and productivity with the unit of analysis being the Inpatient Health Center. Using primary data types whose data sources come from management that has been determined during the research period which was carried out in September – December 2020. The population is Community 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, South West, East and Central Aceh regions. The number of samples was determined using the Slovin formula ( $n = \frac{N}{1+N(5\%)^2}$ ), where to get it  $n = \frac{137}{1+137(5\%)^2} = 102$  Inpatient Health Center as a randomly selected sample. Data collection was carried out by distributing questionnaires that had been prepared to 375 management respondents. Ordinal measurement scale using the Likert Scale Summated Rating (Cooper & Schindler, 2003). This research variable consists of Budget Policy and Productivity, as in table 3.1. the following:

Table. 3.1. Operational Research Variables.

No	Variabel	Variable Definition	Indicator	Source
1	Budget Policy	Fund allocation policies are determined appropriately using a participatory approach (Bonnell, 2016) which takes into account needs (Achen & Bartels 2016; Dimiter, et al, 2018) where the volume can be measured, most of which are for services related to the public based on programs and activities (Ellegard ., 2019)	<ol style="list-style-type: none"> <li>1. Accuracy in determining budget allocations</li> <li>2. Participatory budgeting</li> <li>3. Budget adequacy</li> <li>4. Proportion of service budget</li> <li>5. Priority of budget allocation</li> </ol>	(Atella et al., 2019; Stadhouders et al., 2018) (UU No 36 / 2009) (PP 34/2014) (Gross & Nirel, 1997; Bonnell, 2016; Mardiasmo,2018; Bastian,2019)
2	Productivity	An operation is related to how the growth of	<ol style="list-style-type: none"> <li>1. Input growth</li> </ol>	(Atella et al., 2019 ;Pena,

		resource input effectively in a process (service process) is transformed, so that it becomes a growth result that is more economical, efficient, and has benefits for management (Grönroos & Ojasalo, 2004).	2. Output growth 3. Increased efficiency.	2011; Stevens,2004 dalam Yalley&Sekhon, 2014; Parasuraman 2005; Du 2017)
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Source: Previous research developed by researchers (2021).

The data analysis techniques in this research use two analytical methods, namely descriptive analysis and verification analysis. The analysis technique used is Linear Regression Analysis. Before carrying out a simple Linear Regression, the first action that must be taken is to evaluate whether the data used can and does fulfill classical assumptions, namely: Normality Test (Ghozali, 2007), Multicollinearity (Ghozali, 2012), Heteroskedasticity (Ghozali, 2011) and Linearity Test (Maysuri & Zainuddin, 2008).

The model feasibility test is used to assess the accuracy of the sample regression function in estimating actual values. Statistically it can be measured by the coefficient of determination value, Ghozal (2011). Next, a multiple simple linear regression analysis test was carried out. Simple linear regression analysis is used to test the influence of variables between the independent variable and the dependent variable, Ghozali (2011).

**Hypothesis testing in this research uses the t test. The t test is used to prove the partial influence of the independent variable on the dependent variable, Ghozal (2011).**

#### 4. Research results and discussion.

##### 4.1 Research result

Respondents return questionnaires through volunteers or researchers themselves. There were 408 questionnaires distributed and all of them were returned, but only 375 respondents answered consistently, the remaining 33 respondents answered inconsistently. From the results of the analysis of 16 questions/statements to measure all the variables in this study, all of them are valid, because the calculated  $r$  is  $>$  than the  $r$  table and reliable, because Cronbach's alpha is  $>$  0.06.

Tabel. 4.1. Assessment Criteria and measurement and structure of Linear Regression.

No	Test Type	Parameter	Criteria	Source
1	Validity	Correlation coefficient	$r\text{-count} > r\text{-table}$	Suliyanto, 2006
2	Reliability	Alpha Cronbach	$> 0,6$	Malhotra, 2009
3	Normality	Kolmogorov Smirnov	$> 0,05$	(Ghozali, 2007)
4	Multicollinearity	VIF	$< 10$	Ghozali, 2012

5	Heteroscedasticity	Uji Glejser	> 0,05	(Ghozali, 2011)
6	Linearity	Linearity test	< 0,05	(Maysuri & Zainudin, 2008)
7	T test	P-Value (Sig.t)	< 0,05	Ghozali, 2012
8	R test	Coefficient of Determination	0-1	Ghozali. 2011
9	Regression	Regression Equation Coefficients	t- count > t-table	Ghozali, 2011

Source: Previous research used as a reference by the researcher (2021).

Based on table 4.1, it can be concluded that the research questionnaire is valid and reliable, so it can be used as a data collection instrument. Furthermore, the classical assumption test shows that the data is normal, not multicollinearity, heteroscedasticity and linear.

Table. 4.2 Outer Loading.

No	Variable	Indicator	Code	Loading
1	Budget Policy	Accuracy in determining budget allocations	KBA 1A KBA 1B	0,443 0,521
		Participatory budgeting	KBA 2A KBA 2B	0,412 0,571
		Budget adequacy	KBA 3A KBA 3B	0,450 0,475
		Proportion of service budget	KBA 4A	0,448
		Budget allocation priorities	KBA 5A	0,432
		2	Productivity	Input Growth
		Output Growth	PR 7A PR 7B	0,707 0,715
		Increased Efficiency	PR 8A PR 8B	0,709 0,761

Source: Processed data (2021).

#### Simple Linear Regression Analysis.

The results of the Simple Linear Regression Equation test can be seen in the following table:

Table 4.3 Simple Linear Regression Analysis Test Results

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	0,968	0,336		6,834	0,000
Budget Policy	0,631	0,110	0,316	6.283	0,000
Dependent Variable: Productivity					
R : 0,532		R Square : 0,283			

Source: Processed data (2021).

From table 4.3 above, it can be seen that the regression equation is  $Y = 0.968 + 0.631X$ . Interpretation of the research results obtained a constant coefficient value of 0.968, a budget policy coefficient value of 0.631. This means that if budget policy is considered constant then productivity will increase by 0.968. If budget policy increases by 1 level, then productivity will increase by 0.631 assuming other variables remain constant.

#### X(Budget Policy) Against Y (Productivity)

From table 4.3 above, it can be seen that for the budget policy variable (X) the calculated t is  $6.283 > t$  table (1.98373), with a P-value of 0.000, which is smaller than 0.05. It can be decided that reject  $H_0$ , meaning that budget policy affects productivity.

The Coefficient of Determination Test is carried out to determine the degree of relationship between the correlation coefficients of the 2 variables  $r_{X,Y}$ . Testing of the structural model was carried out by looking at the R Square value which is a model Goodness of Fit test which can be seen in table 4.3. From table 4.3 above, the correlation coefficient (R) value is 0.532, meaning the relationship between the independent variable and the dependent variable is 53.2% and the R Square (R<sup>2</sup>) value is 0.283. This means that the ability of the independent variable to explain variations in dependent changes is 28.3%.

#### 4.2. Discussion..

The results of this research show empirical evidence that the Budget Policy variable has a significant effect on increasing the productivity of Inpatient Health Centers, thereby confirming research conducted by (Ahmed et al, 2017) which concluded that budget policy has a significant positive effect on productivity. In line with research (Meng et al, 2016) which concluded that effective planning policies and efficient service delivery increase competitiveness, meaning that budget policy has a significant positive effect on productivity.

From the research results, there is a relatively strong relationship between the independent and dependent variables and the ability of the independent variable to explain variations in changes in the dependent is 28.3%, while the remaining 71.7% is explained by other factors outside the regression model analyzed and/or influenced by the variables. and other factors not used in this research. This is in line with research (Lhadari et al, 2011; Akhtered et al., 2011 in Mesala & Paul, 2018) concluding that if policies are oriented towards increasing customers, it can increase profits as productivity.

The results of this research also found that budget policy has a significant effect on productivity. In this way, the more precise the budget policy design made by the puskesmas management, the more productivity it can increase at the puskesmas and vice versa, therefore the results of this research confirm research conducted by (Atella et al, 2019) which concluded that budget policy is oriented towards efficiency, focus on cost control and productivity, meaning that budget policy has a direct and significant positive effect on productivity.

(Yuan et al., 2018) said that the productivity and creativity of public sector organizations increases efficiency and effectiveness. The results of this research are strengthened by research conducted by Gross. & Nirel, N, (1997) who concluded that budget policy has the potential to increase productivity by controlling costs and Shahriari & Lewis (2001) in Lewis (2006) stated that low productivity in health services is due to imbalance in health services, meaning that budget policy has a significant positive effect with productivity.

## **5. Conclusions and Practical Implications.**

### **5.1. Conclusion**

This research found that Budget Policy influences the productivity of Community Health Centers in the region. Inpatient Health Centers must make improvements related to Budget Policy and productivity on a regular basis and analyze in more depth the factors that can influence increased productivity. Inpatient Health Centers should be more oriented towards creating superior service activities compared to those currently available, so that they can increase productivity. This research can be used as evaluation material in developing strategies to increase productivity, because budget policies can increase productivity. Bappeda, BPKAD, Health Office, DPR, both Provincial Government and Regency/City Government, allocate sufficient budgets, make Puskesmas a BLUD and put in place appropriate Puskesmas management. BPJS should support Community Health Centers in increasing productivity by making appropriate regulatory provisions

### **5.2. Limitations and Recommendations.**

1. This research is limited to the scope of Community Health Centers only, not reaching all organizations that influence the productivity of Community Health Centers, both the Government, the community and other stakeholders, such as Bappeda, BPKAD, Health Office, DPR, both Provincial Government and Regency/City Government.
2. This research is limited to budget policy variables, it would be better to examine other factors that influence productivity by considering a wider sample, so that conclusions can produce broader coverage across all Inpatient Health Centers in Indonesia that are registered with the Indonesian Ministry of Health.
3. This research is limited to community health centers only, it would be better to consider the influence of the Health Insurance Administering Agency (BPJS) on increasing the productivity of community health centers.
4. It is necessary to implement a budget policy that is oriented towards increasing the productivity of inpatient health centers in Aceh.
5. There is a need for Community Health Center Management training that is oriented towards increasing Community Health Center productivity.
6. It is necessary to consider making the Puskesmas a regional work unit (SKPD) or Regional Public Service Agency (BLUD), so that the Puskesmas has broad authority to increase productivity.

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