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Enhancing Human Capital in Indonesia: Does Economic Policy Work?

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ABSTRACT

Since 2015, sustainable development has become the leading goal of all development at the global level. Human development is a crucial aspect of sustainable development planning and strategies. This study analyzes the impact of public policies on the Human Development Index (HDI) in 34 Indonesian provinces from 2015-2020. The study examines budget allocations for education, health, general allocation funds, population, and employment factors. This study employs panel data regression models for different province groups, including all provinces, non-expansion provinces, and expansion provinces. The results indicate that the education budget and population have a positive effect on HDI, while the health budget does not affect HDI in any of the models. However, the general allocation of funds and labor force participation rate have different effects in different models. Therefore, it is suggested that education policies have had more impact than health policies on improving human capital in Indonesia.

1. INTRODUCTION

Economic development is vital in increasing economic income and people's welfare. Natural resources, population, human and physical capital, technology, and infrastructure are factors that influence a nation's economy [1]. Human resources is one of the essential factors in economic development. It is a potential owned by an individual that covers knowledge, information, relationships, general ability, and health accumulated over a lifetime that can be developed further. The potential is calculated using the Human Development Index (HDI), which provides indicators of success in efforts to build the quality of human life.

In 2017, the World Bank Group initiated the Human Capital Project to create political space for national leaders to prioritize transformational human capital investments [2]. The IMF-World Bank Summit introduced an indicator that can measure human quality, known as the Human Capital Index (HCI) [3]. This index can be used to assess the contribution of education and health to the productivity of future generations of workers. This can be one of the policy references so that the government can make policies that are right on target, to increase worker productivity in the next generation of workers and boost the economy [4]. HCI can be used as one of the indicators to evaluate human development so that it is expected to increase investment in human capital for greater equity and economic growth [5]. According to data from the World Bank, Indonesia's HCI increased from 0.53 in 2018 to 0.54 in 2020. This increase demonstrates the positive impact of the government's efforts to enhance the quality of human resources through the State Budget (APBN).

However, many developing countries are slow in identifying human resource problems [6]. They tend to focus on the development of visible basic infrastructure, ignoring the budget for education and health which are the main components of improving human resources [7]. Government spending on education and health has contributed to human capital development in the Czech Republic [8]. Sun et al. [9] also emphasized the significance of education budgets in developing human resources in China, as it reduces dependence on natural resources. Health budgets have also positively impacted human capital development in Iran [10], Organisation for Economic Co-operation and Development (OECD) countries [11], and developing countries [12]. Government investment in health infrastructure leads to an overall improvement in quality of life.

The economic development of a country reflects the level of public welfare and the higher quality of human resources [13-15]. The development of the education sector, which is reflected in higher education budget allocations, will improve the quality of learning and produce better human capital outcomes. Apart from education, a high-growth health sector through a larger health budget allocation can encourage improvements in the quality of human resources [16]. Government fiscal policy through the General Allocation Fund is also considered a factor that can affect the quality of human resources because it increases the ability of regions to improve their regional development, including human resource development [17]. Other factors that can affect the quality of human resources are population [18, 19] and labor force participation rate [15, 20]. The increase in population and labor force will increase the potential of human resources with skills, knowledge, and innovation.

Regional disparities have long been a challenge in Indonesia

due to imbalances between Java and areas outside Java, as well as between the western and eastern regions, and urban and rural areas. These imbalances are particularly evident in the country's natural resource potential. The expansion has opened up opportunities for bureaucratic and political rent-seeking, namely the opportunity to obtain financial benefits, both from the central government and from regional revenues themselves. Thus, the impact of regional expansion on the economy is a challenge for the Indonesian government in implementing public policy.

Research on the determinants of human resources has been conducted in Indonesia [16, 21]. Nurdiana et al. [16] found that government budget for education, health, and GRDP impacts Human Development Index in Makassar city. Rahmawati and Nur Intan [21] also found that local government spending and GDP significantly impact the Human Development Index in East Java province. Government spending influences the educational dimension, while GDP affects purchasing power. However, there is still a few studies that analyzed the impact of regional expansion on the quality of human resources. Thus, this study fills the research gap by comparing the research model for non-expansion provinces with expansion provinces.

This study aims to investigate the impact of public policies on human capital quality in Indonesia through the education budget, health budget, general allocation fund, economic, population, and labor sectors. It is hoped that the results will reveal the differences in human capital quality in three province groups, including all provinces, non-expansion provinces, and expansion provinces.

2. LITERATURE REVIEW

The basic principle of human resource quality theory is the belief that people's learning capacities are comparable to other resources involved in the production of goods and services [22]. Theories on the quality of human resources seek to explain the benefits of education and training as a form of investment in human capital, and the main proposition is that people are considered a form of capital for development. Based on the theoretical definition of the quality of human capital, the main result of investing in people is change, which is manifested at the individual level in the form of increased performance, and at the organizational level in the form of increased productivity and profitability, or at the societal level in the form of returns that benefit the whole society [23].

The quality of human resources contributes to an increasing competitive advantage over the diffusion of innovation and technology [24]. Acemoglu et al. [25] stated that high technological changes in a sector can lead to significant demand for an educated and skilled workforce. Most economists agree that human capital is a key factor in explaining rich and poor countries.

2.1 The influence of economic sector on human resources quality

Improving the economic sector can accelerate the development of human resources, leading to increased purchasing power, improved education, and improved health. However, high capital accumulation in a region does not necessarily result in equal prosperity for all residents. Furthermore, the rapid accumulation of physical capital does not necessarily lead to an increase or improvement in the distribution of benefits to the entire population. Accelerating the improvement of human development indicators can aid in the transformation of developing countries into developed countries [14].

H1: Economic sector variables positively affect the quality of human resources

2.2 The influence of education on human resources quality

Improving the quality of life in a region is closely tied to the government's role in implementing policies and programs aimed at enhancing the community's well-being through budget allocation for education. The amount of government funding allocated to education has a direct effect on the quality of human resources. Education plays a significant role in enabling developing countries to absorb modern technology and develop their economic capacity. Human capital investment is crucial in the knowledge- and information-based sectors of the economy. Quality of education is more important than quantity [6]. Zhang et al. [26] suggested that school enrollment rates based on schooling level or literacy rates are acceptable measures of human capital when considering the average years of education.

H2: Education sector variables positively affect the quality of human resources

2.3 The influence of health sector on human resources quality

Health is an indicator of society's well-being. Government spending on health can lead to the accumulation of health capital and improvement in public health, which can have a positive impact on human capital. By improving health indicators, health spending can increase the inventory of human capital and labor productivity. Improving public health can lead to a more motivated and productive workforce, thereby resulting in increased efficiency [10]. Government spending in the education and health sectors can contribute to achieving good education and health for all individuals, thereby improving human development. Increasing government spending in this sector can enhance population productivity and promote human development

H3: Health sector variables positively affect the quality of human resources.

2.4 The influence of fiscal sector on human resources quality

The implementation of regional autonomy and fiscal decentralization is based on the idea that regions are better equipped to understand the needs and standards of service of their people. The granting of regional autonomy is expected to increase people’s welfare in these regions through economic growth. The increase in decentralization funds transferred by the central government each year is expected to boost the regional economy further. According to Nordiawan [27], general allocation funds are provided to regions for several reasons such as addressing vertical and horizontal fiscal imbalances, maintaining minimum service standards in each region, and promoting economic stability. The purpose of these funds is to reduce fiscal disparities between regions, based on their original regional income. It is important to note that subjective evaluations were excluded from the analysis.

H4: Fiscal sector variables positively affect the quality of

human resources.

2.5 The influence of population sector on human resources quality

Human resources are not only about quantity but also quality. Achieving a high-quality population requires a good synergy between the population and policymakers. A large population has the potential for development, but must also be utilized with adequate quality [28]. Investigating the relationship between population growth and the quality of human resources is crucial. The population debate is of global interest, and foreign aid agencies often use human development to determine the distribution of aid [29]. The issue of population is not just about numbers, but also about quality of life and material well-being. There is no consensus on the severity of the rapid population growth.

H5: Population sector variables positively affect the quality of human resources.

2.6 The influence of employment sector on human resources quality

In 2019, the Central Statistics Agency (BPS) recorded Indonesia's labor force at 133.56 million people, which is an increase of 1.95 million from the previous year. This indicates that the supply of labor has increased, with a corresponding increase in the demand for labor. A properly utilized large labor force can increase economic activity, leading to a more prosperous community and improved human resources. However, excess labor can lower labor productivity and reduce income, especially by decreasing the level of prosperity achieved and the quality of human capital and living standards. Therefore, it is important to maintain balance in the labor market. However, an excess of labor can lower labor productivity and reduce people's income, ultimately decreasing the level of prosperity achieved and the quality of human capital and living standards.

H6: The employment variable (labor force participation rate) has a positive or negative effect on the quality of human capital.

3. METHODOLOGY

This study employed a quantitative methodology using panel data regression. Panel data are a combination of time-series and cross-sectional data. Panel data is used because it can control and catch the heterogeneity among Indonesian provinces. This study used cross-sectional data to determine the effects of education (educational budget), health (health budget), fiscal decentralization (general allocation funds), population (total population), and employment (labor force participation rate) on the Human Development Index (descripted in Table 1) in 34 provinces in Indonesia from 2015 to 2021.

The panel data regression equation model in this study is calculated using natural logarithms as follows:

$$HDI_{it} = \alpha_0 + \alpha_1 EB_{it} + \alpha_2 HB_{it} + \alpha_3 GAF_{it} + \alpha_4 POP_{it} + \alpha_5 LFPR_{it} + \mu_{it} \quad (1)$$

With descriptions:
HD1 = Human Development Index
EB = Education's Budget
HB = Health's Budget
GAF = General Allocation Fund
POP = Total Population
LFPR = Labor Force Participation Rate
I = Unit Cross Section of Province
α_i = Related Variable Parameters
μ_{it} = Error Term or Disturbing Variable
t = Year Number of Researches 2015-2020

Secondary data for this study were obtained from the web pages of related agencies, including the Central Statistics Agency (BPS), the Ministry of Finance, and the World Bank. The research model was analyzed using three units of the cross-sectional model to see the impact of the expansion of provinces in Indonesia on the HDI based on the expansion status, including 34 provinces in Indonesia, 26 non-expansion provinces, and 8 expansion provinces. Data analysis conducted using panel data regression model estimation was performed using three model approaches: common effect, fixed effect, and random effect models.

Table 1. Variable description

Variable	Indicator	Definition
Human Development Index (HDI)	Human Development Index	A comparative measure of life expectancy, literacy, education and standard of living in points
Education (EB)	Education's Budget	The budget allocated for education in trillions of rupiah
Health (HB)	Health's Budget	The budget allocated for health in trillions of rupiah
Fiscal Decentralization (GAF)	General Allocation Fund	Funds originating from APBN revenues allocated with the aim of equal distribution of inter-regional financial capacity to fund regional needs in the context of implementing decentralization in units of trillion rupiah
Population (POP)	Total Population	All people who are domiciled in the geographical area of the Republic of Indonesia for 6 months or more and or those who are domiciled for less than 6 months but aim to settle in units of thousands of people
Employment (LFPR)	Labor Force Participation Rate	The percentage of the adult population in the labor force in percent units

4. RESULTS AND DISCUSSION

One of the advantages of the panel data model in this study is being able to control or capture heterogeneity between provinces in Indonesia. Meanwhile, time series and cross-section data are unable to accommodate heterogeneity between provinces, thus allowing bias in the estimation results. Differences between provinces can be seen after knowing the models used for panel data. Combining time series and cross-section data will provide a greater number of observations. Increasing the number of observations will increase the variability and information of data to reduce collinearity between variables. This increase will also increase the degrees of freedom which in turn will be able to produce more efficient estimates.

Table 2. Chow test

Test Cross-Section Fixed Effects			
Effects Test	**Statistic**	**df**	**Prob.**
34 provinces			
Cross-section F	675.931338	(33,162)	0.0000
Cross-section Chi-square	991.380076*	33	0.0000
26 provinces			
Cross-section F	1071.238206	(25,122)	0.0000
Cross-section Chi-square	825.583467*	25	0.0000
8 provinces			
Cross-section F	358.533245	(7,35)	0.0000
Cross-section Chi-square	205.748776*	7	0.0000

Note: *Reject Ho: common effect model at α=5%

In panel data analysis, the first step is selecting the best model from three types of panel data models: common effect, fixed effect, or random effect. The first test is the Chow test to choose between the common effect or fixed effect model with the Ho common effect, with the results of the selected model being the fixed effect (Table 2). The next test is the Hausman test. The Hausman test choose between the fixed effect model and the random effect, which can be seen in Table 3.

Table 3. Hausman test

Test Cross-Section Random Effects			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. df**	**Prob.**
34 provinces			
Cross-section random	137.974284*	5	0.0000
26 provinces			
Cross-section random	215.194901*	5	0.0000
8 provinces			
Cross-section random	10.252919	5	0.0684

Note: *Reject Ho: random effect model at α=5%

HDI continues to be an important indicator in measuring human development progress. In addition, HDI can determine the rank or level of development of a region/country. The indicators used in Indonesia to calculate HDI are life expectancy at birth, literacy rate, average length of schooling, and expenditure per capita. In 2010, United Nation Development Program (UNDP) officially introduced HDI calculation using a new method. This method uses a new indicator in calculating HDI. The indicators for literacy rates and combined gross enrollment rates are replaced by indicators for expected years of schooling and average years of schooling. The GDP per capita indicator is also replaced by the Gross National Product (GNP) per capita. In addition, the calculation of the average index has also been changed from the arithmetic average to the geometric average. Indonesia began to apply the HDI calculation using a new method in 2014. The indicators used in Indonesia are the same as UNDP, except for GNP per capita. This indicator is provided by spending per capita.

Table 4. Fixed and random effect model

	Dependent Variable: HDI					
	Model 1 (FEM) All Provinces		**Model 2 (FEM) Expansion Provinces**		**Model 3 (FEM) Non-Expansion Provinces**	
	Coeff	**Prob**	**Coeff**	**Prob**	**Coeff**	**Prob**
EB	0.848641	0.0000*	0.393457	0.0019*	1.987873	0.0000*
HB	0.045942	0.3150	0.060280	0.2469	0.018523	0.8032
GAF	0.212780	0.1971	0.386377	0.0102*	-0.532199	0.2935
POP	20.55916	0.0000*	30.86003	0.0000*	3.247034	0.0413*
LFPR	0.030970	0.0648**	0.028771	0.0623**	0.029713	0.4720

Note: *significant at α=5% **significant at α=10%

Improving basic human capabilities is one of the efforts to increase the nation's potential, which in turn has an impact on improving human quality. Education and health are the main assets that a nation must have to increase its potential. Therefore, to create quality human beings, it can be started by improving education and health sectors.

Result of the analysis can be seen in Table 4. The Education Budget (EB) has a significant positive effect on HDI in all models. These results are consistent with the studies of Mongan [30], Nurdiana et al. [16], and Nurvita et al. [31] but inconsistent with Widodo et al. [32] and Yogiantoro et al. [33]. Education broadens one's opportunities. Education enhances creativity and imagination. As an added value, education will also broaden other options. Educated people will pay more attention to the level of health in order to live longer. Not only that, educated people will also have a greater chance of getting a better job and income. Therefore, education is important as a means to improve human quality in order to expand their opportunities.

In health sector, the budget has not been able to drive an increase in HDI in all provinces in Indonesia. The implementation of decentralization cannot be separated from various problems that arise, including the lack of commitment of the local government in health development, the lack of services for the poor and the lack of capacity of regional staff as well. In addition to these problems, there are problems with the quality and financing of health services. The health sector will certainly compete with other sectors in order to obtain sufficient fund allocation for service programs for the community. Health is one of the factors that affect the quality of human resources. Lack of calories, nutrition, or low health status for the Population (POP) will result in low quality human beings with retarded mental levels. The results of this study support the research of Widodo et al. [32], where the Health Budget (HB) had no effect on HDI in Indonesia in the 2007-2016 period. However, these results are inconsistent with researches of Razmi et al. [10] in Iran and Çağlayan-Akay

and Van [3] in 130 countries showing that HB has a positive effect on HDI.

The General Allocation Fund (GAF) is provided by the central government to reduce the fiscal gap between regions so that development occurs evenly in each region. GAF is expected to assist the government in meeting regional needs so as to improve the quality of human development in the area. Therefore, local governments are expected to be able to manage these funds properly and allocate them to finance regional expenditures that are oriented towards improving people's welfare through development and improving services to the community allocated to capital expenditures. The results showed that GAF had an effect on HDI only in model 2. GAF as a driving force for HDI increases only occurred in provinces that were not the result of expansion. These results are consistent with the studies of Badrudin and Khansanah [34] and Wulandari et al. [35]. However, the GAF in model 1 (all provinces) and model 3 (expansion provinces) has not been able to drive an increase in HDI. These results support the research of Rahmayati and Pertiwi [36] and Sarkoro and Zulkifar [37]. The absence of GAF influence on HDI is due to the fact that GAF allocations are more focused on other objectives, such as encouraging economic growth. In addition, the GAF is mostly used for personnel spending. This can be seen from the GAF formulation which includes the basic allocation component as the main component which dominates the overall GAF received by the regions. The basic allocation is the budget allocation used for personnel expenditure.

The POP increases the chances of creating higher innovations and technological advances. Technological progress is a source of economic growth and high economic growth encourages an increase in the quality of human resources [15, 38]. The total POP is able to increase HDI in all provinces in Indonesia. These results are in line with Purwanto and Sinaga [18]'s research, that population growth in Thailand is able to encourage an increase in the quality of human resources. However, these results contradict Zheng and Wang [19]'s research where higher POP growth causes a decrease in HDI in China, while Çağlayan-Akay and Van [3]'s study in 130 countries shows that an increase in Population (POP) has a positive effect on HDI in the short term, but negative in the long term. From the employment side, the higher Labor Force Participation Rate (LFPR) can also encourage an increase in HDI, except for Model 3 (provinces resulting from expansion). The results of the research that LFPR has a positive effect on HDI are in line with the research of Jamaliah [39] in Indonesia. However, research by Sethi et al. [15] in the South Asian countries that were sampled (Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka) and Hong Vo et al. [38] in 9 countries in Southeast Asia showed that LFPR had no effect on the quality of human resources. The labor force reflects the number of people working and unemployed. In the newly expanded provinces, the impact of increasing the number of people working has not been able to provide a multiplier effect on the economy through increased consumption and investment, thus limiting access to all facilities that can improve the quality of human resources.

The result showed that in all provinces and non-expansion provinces, all variables except employment had a positive effect on HDI. While in expansion provinces, GAF and POP had positive effect on HDI. In human capital index, all provinces and non-expansion provinces showed that investation, general alocation fund, and health budget had negative impact. In expansion provinces, only general allocation fund had positive influence on human capital index. Health budget and employment sector had negative influence on human capital index. While the other sectors had no effect at all.

5. CONCLUSIONS

The allocation of the educational budget through public policy has the potential to increase the HDI in all provinces of Indonesia. It aligns with the government's current priority of human resource development, following intensive infrastructure development aimed at unifying the nation, strengthening interconnectivity, and driving more effective and efficient economic processes. The government has identified three areas of focus for human development in the education and culture sector. These include early childhood education, character education (which is a priority at the basic education level), and preparing a capable and skilled generation through secondary education and community education. The combination of education and culture is crucial in creating an ecosystem that values experience and produces quality human resources for a progressive Indonesia. The educational process should focus on intellectual intelligence as well as emotional, social, and spiritual maturation to strengthen the nation's character.

Efforts to improve the quality of human resources in education depend on the central government, local governments, and other stakeholders. The government channels the budget for education to the regions, including through the general allocation fund. However, the study results indicate that the impact of GAF on HDI has not been uniform across all provinces in Indonesia. Therefore, local governments should take a more proactive approach to promote education. The development of education and culture in enhancing the quality of human resources requires synergy and active participation from the government, regional authorities, and all stakeholders.

Practical implication of the study is giving a recommendation for policymakers as an evaluation material to increase the regional government performance in constuction and development of human resources. Moreover, it is also can be considered as a planning in regional expansion program.

The limitations of this study are the static method, which does not take into account the effect of time lag, a relatively short time span, and macro data, and thus does not capture individual behavior, which may have an impact on the HDI and HCIs. Future research is recommended to use a more complex research methodology, such as a dynamic panel with an Autoregressive Distributed Lag (ARDL) or Vector Autoregressive (VAR) approach with a wider scope of study areas and a longer duration. Future research could expand human capital indicators or modify HDI and HCI with spatially equipped microdata.

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